SAFETY DATA SHEET

Issuing Date 12-Sep-2012  Revision Date 28-Jan-2015  Revision Number 2

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1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name CR2032

Other means of identification

Synonyms None

Recommended use of the chemical and restrictions on use

Recommended Use Lithium Primary/Metal Batteries

Uses advised against No information available

Details of the supplier of the safety data sheet

Supplier Name SHUN WO NEW POWER BATTERY TECHNOLOGY LTD.
Supplier Address UNIT 920, NAN FUNG COMMERCIAL CENTRE, 19 LAM LOK ROAD, KOWLOON BAY HONG KONG N/A N/A HK
Supplier Phone Number Phone:852-23673218
Contact Phone 852-23673218 EXT 13
Supplier Email cherrylam@newsun.com.hk
Emergency telephone number

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200) This product is an article which is a sealed battery and as such does not require an MSDS per the OSHA hazard communication standard unless ruptured. The hazards indicated are for a ruptured battery.

<p>| Acute toxicity - Oral          | Category 4 |
| Acute toxicity - Inhalation (Gases) | Category 4 |
| Acute toxicity - Inhalation (Dusts/Mists) | Category 4 |
| Skin corrosion/irritation      | Category 2 |
| Serious eye damage/eye irritation | Category 2 |</p>
<table>
<thead>
<tr>
<th>Carcinogenicity</th>
<th>Category 1B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reproductive toxicity</td>
<td>Category 1B</td>
</tr>
<tr>
<td>Specific target organ toxicity (repeated exposure)</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

**GHS Label elements, including precautionary statements**

### Emergency Overview

<table>
<thead>
<tr>
<th>Signal word</th>
<th>Danger</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Danger</td>
</tr>
</tbody>
</table>

**Hazard Statements**
- Harmful if swallowed
- Harmful if inhaled
- Causes skin irritation
- Causes serious eye irritation
- May cause cancer
- May damage fertility or the unborn child
- May cause damage to organs through prolonged or repeated exposure

This is a battery. In case of rupture: the above hazards exist.

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Physical State</th>
<th>Odor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silver</td>
<td>Solid</td>
<td>Tar like</td>
</tr>
</tbody>
</table>

**Precautionary Statements - Prevention**
- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Use only outdoors or in a well-ventilated area
- Do not breathe dust/fume/gas/mist/vapors/spray
- Wear eye/face protection

**Precautionary Statements - Response**

**Eyes**
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- If eye irritation persists: Get medical advice/attention

**Skin**
- IF ON SKIN: Wash with plenty of soap and water
- If skin irritation occurs: Get medical advice/attention
- Take off contaminated clothing and wash before reuse

**Inhalation**
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Ingestion**
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- Rinse mouth
Precautionary Statements - Storage  
Store locked up

Precautionary Statements - Disposal  
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)  
Not applicable

Unknown Toxicity  
3.94% of the mixture consists of ingredient(s) of unknown toxicity

Other information  
Very toxic to aquatic life with long lasting effects

Interactions with Other Chemicals  
Use of alcoholic beverages may enhance toxic effects.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>Trade Secret</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>30 - 60</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>10 - 30</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>5 - 10</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>1 - 5</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>1 - 5</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>1 - 5</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>1 - 5</td>
<td>*</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Proprietary</td>
<td>&lt; 0.1</td>
<td>*</td>
</tr>
</tbody>
</table>

*The exact percentage (concentration) of composition has been withheld as a trade secret

4. FIRST AID MEASURES

First aid measures

General Advice  
First aid is upon rupture of sealed battery.

Eye Contact  
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. Do not rub affected area.

Skin Contact  
Wash off immediately with soap and plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Inhalation  
Remove to fresh air. Get medical attention immediately if symptoms occur.

Ingestion  
Rinse mouth immediately and drink plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Call a physician.
Self-protection of the first aider  Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Wear personal protective clothing (see section 8).

Most important symptoms and effects, both acute and delayed

Most Important Symptoms and Effects  Burning sensation. Coughing and/ or wheezing. Difficulty in breathing.

Indication of any immediate medical attention and special treatment needed

Notes to Physician  Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media  Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media  CAUTION: Use of water spray when fighting fire may be inefficient.

Specific Hazards Arising from the Chemical  No information available.

Hazardous Combustion Products  Carbon oxides.

Explosion Data  
Sensitivity to Mechanical Impact  No.

Sensitivity to Static Discharge  No.

Protective equipment and precautions for firefighters  As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.
6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions
Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Avoid generation of dust. Do not breathe dust. Evacuate personnel to safe areas.

Other Information
Refer to protective measures listed in Sections 7 and 8.

Environmental Precautions
Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so.

Methods and material for containment and cleaning up

Methods for Containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling
In case of rupture. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. Use personal protection equipment.

Conditions for safe storage, including any incompatibilities

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up.

Incompatible Products

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>TWA: 0.02 mg/m³ Mn</td>
<td>(vacated) Ceiling: 5 mg/m³</td>
<td>IDLH: 500 mg/m³ Mn</td>
</tr>
<tr>
<td></td>
<td>TWA: 0.1 mg/m³ Mn</td>
<td>Ceiling: 5 mg/m³ Mn</td>
<td>TWA: 1 mg/m³ Mn</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STEL: 3 mg/m³ Mn</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>TWA: 0.5 mg/m³</td>
<td>TWA: 1 mg/m³</td>
<td>IDLH: 250 mg/m³</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(vacated) TWA: 1 mg/m³</td>
<td>TWA: 0.5 mg/m³</td>
</tr>
</tbody>
</table>
Other Exposure Guidelines

Hexavalent Chrome may be formed during welding. Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992). See section 15 for national exposure control parameters.

Appropriate engineering controls

Engineering Measures

- Showers
- Eyewash stations
- Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection

If splashes are likely to occur: Wear safety glasses with side shields (or goggles). None required for consumer use.

Skin and Body Protection

Wear protective gloves and protective clothing. Long sleeved clothing. Impervious gloves. None required for consumer use.

Respiratory Protection

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not breathe dust. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Silver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>No information available</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>Tar like</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Melting / freezing point</td>
<td>No data available</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>No data available</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Flash Point</td>
<td>No data available</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>No data available</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability
Stable under recommended storage conditions.

Possibility of Hazardous Reactions
None under normal processing.

Hazardous Polymerization
Hazardous polymerization does not occur.

Conditions to avoid
Excessive heat.

Incompatible materials

Hazardous Decomposition Products
Carbon oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation
Specific test data for the substance or mixture is not available. May cause irritation of respiratory tract. Harmful by inhalation. (based on components).
Eye Contact
Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Irritating to eyes. May cause redness, itching, and pain. May cause temporary eye irritation.

Skin Contact
Specific test data for the substance or mixture is not available. Expected to be an irritant based on components. Irritating to skin. Prolonged contact may cause redness and irritation.

Ingestion
Specific test data for the substance or mixture is not available. Ingestion may cause irritation to mucous membranes. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May be harmful if swallowed. (based on components).

Component Information

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>= 984 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>= 9000 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>= 29000 mg/kg (Rat)</td>
<td>&gt; 20 mL/kg (Rabbit)</td>
<td>-</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>&gt; 10000 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>-</td>
<td>-</td>
<td>= 40000 ppm (Rat) 4 h</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>&gt; 9000 mg/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms
Erythema (skin redness). May cause redness and tearing of the eyes. Coughing and/or wheezing.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Sensitization
No information available.

Mutagenic Effects
No information available.

Carcinogenicity
The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>Group 3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>A3</td>
<td>Group 2B</td>
<td>Reasonably Anticipated</td>
<td>X</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Group 2B</td>
<td></td>
<td>Reasonably Anticipated</td>
<td>X</td>
</tr>
</tbody>
</table>

ACGIH (American Conference of Governmental Industrial Hygienists)
A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)
Group 2B - Possibly Carcinogenic to Humans
Group 3 - Not Classifiable as to Carcinogenicity in Humans

NTP (National Toxicology Program)
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)
X - Present

Reproductive Toxicity
Contains a known or suspected reproductive toxin.
STOT - single exposure

No information available.

STOT - repeated exposure

Causes damage to organs through prolonged or repeated exposure. Based on classification criteria from the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200), this product has been determined to cause systemic target organ toxicity from chronic or repeated exposure. (STOT RE).

Chronic Toxicity

No known effect based on information supplied. Contains a known or suspected carcinogen. Contains a known or suspected reproductive toxin. Possible risk of irreversible effects. Avoid repeated exposure. Prolonged exposure may cause chronic effects. May cause adverse effects on the bone marrow and blood-forming system. Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitization of susceptible persons.

Target Organ Effects


Aspiration Hazard

No information available.

Numerical measures of toxicity  Product Information

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)
997.00  mg/kg

ATEmix (inhalation-gas)
14,388.00  ppm (4 hr)

ATEmix (inhalation-dust/mist)
4.80  mg/l

ATEmix (inhalation-vapor)
35.00  ATEmix
12. ECOLOGICAL INFORMATION

Ecotoxicity
Very toxic to aquatic life with long lasting effects.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Toxicity to Algae</th>
<th>Toxicity to Fish</th>
<th>Toxicity to Microorganisms</th>
<th>Daphnia Magna (Water Flea)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td></td>
<td>96h LC50: = 13.6 mg/L (Morone saxatilis)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>72h EC50: &gt; 500 mg/L (Desmodesmus subspicatus)</td>
<td>96h LC50: &gt; 1000 mg/L (Cyprinus carpio) 96h LC50: = 5300 mg/L (Leuciscus idus)</td>
<td>EC50 &gt; 10000 mg/L 17 h</td>
<td>48h EC50: &gt; 500 mg/L</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>72h EC50: = 0.18 mg/L (Pseudokirchneriella subcapitata) 96h EC50: 0.174 - 0.311 mg/L (Pseudokirchneriella subcapitata)</td>
<td>96h LC50: &gt; 100 mg/L (Brachydanio rerio) 96h LC50: = 1.3 mg/L (Cyprinus carpio) 96h LC50: = 10.4 mg/L (Cyprinus carpio)</td>
<td></td>
<td>48h EC50: &gt; 100 mg/L 48h EC50: = 1 mg/L</td>
</tr>
</tbody>
</table>

Persistence and Degradability
No information available.

Bioaccumulation

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>&lt;0</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>0.48</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>1</td>
</tr>
</tbody>
</table>

Other adverse effects
No information available.
13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging

Dispose of contents/containers in accordance with local regulations.

US EPA Waste Number

D007

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>RCRA</th>
<th>RCRA - Basis for Listing</th>
<th>RCRA - D Series Wastes</th>
<th>RCRA - U Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td></td>
<td>Included in waste streams: F032, F034, F035, F037, F038, F039</td>
<td>5.0 mg/L regulatory level</td>
<td></td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td></td>
<td>(hazardous constituent - no waste number)</td>
<td>Included in waste streams: F006, F039</td>
<td></td>
</tr>
</tbody>
</table>

California Hazardous Waste Codes

181

This product contains one or more substances that are listed with the State of California as a hazardous waste.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>Toxic</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Corrosive</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Ignitable</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Reactive</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Toxic powder</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>Ignitable powder</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

Note:

The transportation of primary lithium cells and batteries is regulated by the International Civil Aviation Organization, International Air Transport Association, International Maritime Dangerous Goods Code and the US Department of Transportation. The batteries must meet the following criteria for shipment: 1. Air shipments must meet the requirements listed in Special Provision A45 of the International Air Transport Association Dangerous Goods Regulations. 2. Meet the requirements for the US Department of Transportation listed in 49 CFR 173.185. 3. The transport of primary lithium batteries is prohibited aboard passenger aircraft. Refer to the Federal Register December 15, 2004 (Hazardous Materials; Prohibited on the Transportation of Primary Lithium Batteries and Cells Aboard Passenger Aircraft; Final Rule)

Lithium batteries shipped as "Lithium batteries", "Lithium batteries packed with equipment", or "Lithium batteries contained in equipment" may not be classified as "Dangerous Goods" when shipped in accordance with "special provision A45 of IATA-DGR" or "special provision 188 of IMO-IMDG Code"

DOT

<table>
<thead>
<tr>
<th>Proper Shipping Name</th>
<th>NOT REGULATED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazard Class</td>
<td>9</td>
</tr>
<tr>
<td>Emergency Response Guide Number</td>
<td>138</td>
</tr>
</tbody>
</table>
15. REGULATORY INFORMATION

International Inventories

TSCA
Complies

DSL
All components are listed either on the DSL or NDSL.

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight-%</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret -</td>
<td></td>
<td>10 - 30</td>
<td>1.0</td>
</tr>
<tr>
<td>Supplier Trade Secret -</td>
<td></td>
<td>5 - 10</td>
<td>1.0</td>
</tr>
<tr>
<td>Supplier Trade Secret -</td>
<td></td>
<td>1 - 5</td>
<td>1.0</td>
</tr>
<tr>
<td>Supplier Trade Secret -</td>
<td></td>
<td>1 - 5</td>
<td>0.1</td>
</tr>
<tr>
<td>Supplier Trade Secret -</td>
<td></td>
<td>&lt; 0.1</td>
<td>0.1</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories

Acute Health Hazard: No
Chronic Health Hazard: No
Fire Hazard: No
Sudden release of pressure hazard: No
Reactive Hazard: No

CWA (Clean Water Act)
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**CERCLA**
This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>Extremely Hazardous Substances RQs</th>
<th>RQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>5000 lb</td>
<td></td>
<td>RQ 5000 lb final RQ</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>100 lb</td>
<td></td>
<td>RQ 100 lb final RQ, RQ 45.4 kg final RQ</td>
</tr>
</tbody>
</table>

**US State Regulations**

**California Proposition 65**
This product contains the following Proposition 65 chemicals.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Proposition 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret  -</td>
<td>Carcinogen</td>
</tr>
<tr>
<td>Supplier Trade Secret  -</td>
<td>Carcinogen</td>
</tr>
</tbody>
</table>

**U.S. State Right-to-Know Regulations**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
<th>Rhode Island</th>
<th>Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Supplier Trade Secret</td>
<td>X</td>
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<tr>
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<td>X</td>
<td>X</td>
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<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Supplier Trade Secret</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

**International Regulations**

**Mexico**

**National occupational exposure limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>Carcinogen Status</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier Trade Secret (10 - 30)</td>
<td></td>
<td>Mexico: TWA= 0.2 mg/m³</td>
</tr>
<tr>
<td>Supplier Trade Secret (5 - 10)</td>
<td></td>
<td>Mexico: TWA 0.5 mg/m³</td>
</tr>
<tr>
<td>Supplier Trade Secret (1 - 5)</td>
<td></td>
<td>Mexico: TWA= 2 mg/m³</td>
</tr>
<tr>
<td>Supplier Trade Secret (&lt; 0.1)</td>
<td></td>
<td>Mexico: TWA 1 mg/m³</td>
</tr>
</tbody>
</table>

Mexico - Occupational Exposure Limits - Carcinogens

**Canada**

WHMIS Hazard Class
Non-controlled

16. OTHER INFORMATION
### NFPA
- **Health Hazards**: 1
- **Flammability**: 0
- **Instability**: 0

### HMIS
- **Health Hazards**: 0
- **Flammability**: 0
- **Physical Hazard**: 0

### Chronic Hazard Star Legend
* = Chronic Health Hazard

**Prepared By**: Product Stewardship  
23 British American Blvd.  
Latham, NY 12110  
1-800-572-6501

**Issuing Date**: 12-Sep-2012  
**Revision Date**: 28-Jan-2015  
**Revision Note**: No information available

**Disclaimer**
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**
1. Identification

(a) Product identifier
Product name: Alkaline Battery

(b) Other means of identification
Product description:
- Model: LR03
- Nominal Voltage: 1.5V
- Weight: 10.6g
- Dimension: 10.2mm×44.0mm (DxH)

(c) Recommended use of the chemical and restrictions on use
Recommended use: Battery.
Restriction on use: No information available.

(d) Details of the supplier of the product
Company name(China): SHENZHEN PKCELL BATTERY CO., LTD.
Address: E2 Building, Guangming Technology Park, No.24 Zhonghua Road, Longhua New Area, Shenzhen, China.
E-mail: info@pkcell.net
Telephone: +86-755-86670672

(e) Emergency phone number
+86-755-86670672

2. Hazard(s) identification

(a) Classification of the chemical
The batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. A sealed Alkaline Battery is not hazardous in normal use.

(b) Label elements
Pictogram(s): No pictogram.
Signal word: No signal word.
Hazard statements: No hazard statement.
Precautionary statements: No precautionary statement.

(c) Description of any hazards not otherwise classified
In case of mistreatment (abusive over charge, reverse charge, external short circuit...) and in case of fault some electrolyte can leak from the cell through the safety device. In these cases refer to the risk of the electrolyte. Contact with internal components may cause irritation or severe burns. Irritating to eyes, respiratory system, and skin. The electrode materials are only hazardous, if the materials are released by mechanical damaging of the cell or if exposed to fire.
Skin touch: Contact with battery electrolyte may cause burns and skin irritation.
Eyes touch: Contact with battery electrolyte may cause burns. Eye damage is possible.
Inhalation: Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.
Ingestion: Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.
(d) **Ingredient with unknown acute toxicity**

No information available.

### 3. Composition/information on ingredients

**Chemical name** | **CAS No.** | **Concentration%**
--- | --- | ---
Iron | 7439-89-6 | 20.42
Manganese dioxide | 1313-13-9 | 40.48
Graphite | 7782-42-5 | 6.35
Potassium hydroxide | 1310-58-3 | 6.77
Water | 7732-18-5 | 8.99
Zinc | 7440-66-6 | 16.49
Indium hydroxide (In(OH)3) | 20661-21-6 | 0.01
Zinc oxide | 1314-13-2 | 0.49

### 4. First-aid measures

**Description of first aid measures**

- **Inhalation:** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
- **Skin contact:** Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice/attention if you feel unwell.
- **Eye contact:** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention if you feel unwell.
- **Ingestion:** Have victim drink 60 to 240 mL (2-8 oz.) of water. and DO NOT induce vomiting. Get medical aid.

**Most important symptoms/effects, acute and delayed**

Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

**Immediate medical attention and special treatment**

No information available.

### 5. Fire-fighting measures

**Extinguishing media**

- **Suitable extinguishing media:** Use foam, dry powder or dry sand, CO₂ as appropriate.
- **Unsuitable extinguishing media:** No information available.

**Special hazards arising from the chemical**

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO, CO₂, Metal oxides, Irritating fumes
(c) Special protective equipment and precautions for fire-fighters

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

6. Accidental release measures

(a) Personal precautions, protective equipment and emergency procedures

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

(b) Methods and materials for containment and cleaning up

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

7. Handling and storage

(a) Precautions for safe handling

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries. Use recommended charging time and current.

(b) Conditions for safe storage, including any incompatibilities

Don't handling Alkaline Battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/exhaustion at the workplace.
Prevent formation of dust.
Information about protection against explosions and fires: Keep ignition sources away- Do not smoke.
Recommended at 0°C~+35°C for long period storage.
Do not storage Alkaline Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects.
Keep out of reach of children.
Do not expose Alkaline Battery to heat or fire. Avoid storage in direct sunlight.
Do not store together with oxidizing and acidic materials.

8. Exposure controls/personal protection

(a) Control parameters
Not established.

(b) Appropriate engineering controls
Under normal conditions (during charge and discharge) release of ingredients does not occur.

(c) Personal protective equipment
Respiratory protection: No personal respiratory protective equipment normally required. In case of inadequate ventilation wear respiratory protection.
Hand protection: Wear protective gloves.
Eye/face protection: No personal protective equipment normally required.
Skin/body protection: Wear protective clothing to prevent contact.

9. Physical and chemical properties

(a) Appearance Cylindrical solid
(b) Odor Monotony
(c) Odor threshold Not available.
(d) pH Not available.
(e) Melting point/freezing point Not available.
(f) Initial boiling point and boiling range Not available.
(g) Flash point Not applicable.
(h) Evaporation rate Not applicable.
(i) Flammability Non flammable.
(j) Upper/lower flammability or explosive limits Not available.
(k) Vapor pressure Not applicable.
(l) Vapor density Not available.
(m) Relative density Not available.
(n) Solubility(ies) Insoluble in water.
(o) Partition coefficient: n-octanol/water Not available.
(p) Auto-ignition temperature 130°C
(q) Decomposition temperature Not available.
(r) Viscosity Not available.

10. Stability and reactivity

(a) Reactivity
Stable under recommended storage and handling conditions.

(b) Chemical stability
Stable under normal conditions.

(c) Possibility of hazardous reactions
When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies controlled release of pressure without ignition.

(d) Conditions to avoid
Do not subject Alkaline Battery to mechanical shock. Keep away from open flames, high temperature.

**(e) Incompatible materials**

Strong oxidizer, strong acid.

**(f) Hazardous decomposition products**

Under fire conditions, the electrode materials can form carcinogenic nickel and cobalt oxides.

11. Toxicological information

**(a) Information on the likely routes of exposure**

<table>
<thead>
<tr>
<th>Route</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation:</td>
<td>Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.</td>
</tr>
<tr>
<td>Ingestion:</td>
<td>Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.</td>
</tr>
<tr>
<td>Skin contact:</td>
<td>Contact with battery electrolyte may cause burns and skin irritation.</td>
</tr>
<tr>
<td>Eye contact:</td>
<td>Contact with battery electrolyte may cause burns. Eye damage is possible.</td>
</tr>
</tbody>
</table>

Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 2, 3, and 4. Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

**(b) Information on toxicological characteristics**

<table>
<thead>
<tr>
<th>Category</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity:</td>
<td>No data available.</td>
</tr>
<tr>
<td>Skin corrosion/irritation:</td>
<td>The liquid in the battery irritates.</td>
</tr>
<tr>
<td>Serious eye damage/irritation:</td>
<td>The liquid in the battery irritates.</td>
</tr>
<tr>
<td>Respiratory sensitization:</td>
<td>The liquid in the battery may cause sensitization to some person.</td>
</tr>
<tr>
<td>skin sensitization:</td>
<td>The liquid in the battery may cause sensitization to some person.</td>
</tr>
<tr>
<td>Carcinogenicity:</td>
<td>Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity:</td>
<td>No data available.</td>
</tr>
<tr>
<td>Reproductive Toxicity:</td>
<td>No data available.</td>
</tr>
<tr>
<td>STOT-Single Exposure:</td>
<td>No data available.</td>
</tr>
<tr>
<td>STOT-Repeated Exposure:</td>
<td>No data available.</td>
</tr>
<tr>
<td>Aspiration Hazard:</td>
<td>No data available.</td>
</tr>
</tbody>
</table>

12. Ecological information

**(a) Ecotoxicity**

Water hazard class 1(Self-assessment): slightly hazardous for water.

**(b) Persistence and Degradability**

No information available.

**(c) Bioaccumulative potential**
No information available.

(d) Mobility in soil
No information available.

(e) Other adverse effects
No information available.

13. Disposal considerations

(a) Safe handling and methods of disposal
Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

14. Transport information

According to PACKING INSTRUCTION 965 ~ 970 of IATA DGR 56rd Edition for transportation, the special provision 188 of IMDG (inc Amdt 35-10). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don’t put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship must be cleaned and sterilized otherwise it is not allowed to assemble articles. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don’t stop over in the residential area and congested area. Forbid to use wooden, cement for bulk transport.

(a) UN number 3480&3481
(b) UN Proper shipping name LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)

(c) Transport hazard class(es) 9
(d) Packing group (if applicable) II
(e) Marine pollutant (Yes/No) No
(f) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code) No information available.
(g) Special precautions No information available.

15. Regulatory information

(a) Safety, health and environmental regulations specific for the product in question

<table>
<thead>
<tr>
<th>CAS No.</th>
<th>USA TSCA</th>
<th>EU EINECS</th>
<th>Japan ENCS</th>
<th>Korea ECL</th>
<th>China IECSC</th>
<th>Canada DSL</th>
</tr>
</thead>
<tbody>
<tr>
<td>7439-89-6</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>
16. Other information, including date of preparation or last revision

(a) Preparation and revision information

Date of previous revision: Not applicable. Date of this revision: 06/03/2015
Revision summary: The first New SDS

(b) Abbreviations and acronyms

TSCA: Toxic Substances Control Act, The American chemical inventory.
DSL: Domestic Substances List
EINECS: European Inventory of Existing Commercial chemical Substances
ENCS: Japanese Existing and New Chemical Substances
ECL: Existing Chemicals List, the Korean chemical inventory.
IECSC: Inventory of existing chemical substances in China.

(c) Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS is provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

End of the SDS

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