MATERIAL SAFETY DATA SHEET

1. Chemical Product and Company Identification
Product Name: Silver Oxide Button Cell (Standard Grade)
Manufacturer: Chung Pak Battery Works Ltd.
Address: 7/F., Chung Pak Commercial Blog., 2 Cho Yuen St., Yau Tong Bay, Kowloon, Hong Kong
Telephone: (00852)27171338
Effective Date: 2008/10/15
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

<table>
<thead>
<tr>
<th>Designation</th>
<th>CAS No.</th>
<th>303</th>
<th>357</th>
<th>386</th>
<th>389</th>
<th>391</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous Components</td>
<td></td>
<td>wt%</td>
<td>wt%</td>
<td>wt%</td>
<td>wt%</td>
<td>wt%</td>
</tr>
<tr>
<td>Silver Oxide (Ag₂O)</td>
<td>20667-12-3</td>
<td>5.4</td>
<td>5.4</td>
<td>5.6</td>
<td>4.8</td>
<td>4.0</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>7440-66-6</td>
<td>13.8</td>
<td>13.8</td>
<td>13.2</td>
<td>12.4</td>
<td>10.0</td>
</tr>
<tr>
<td>Manganese Dioxide (MnO₂)</td>
<td>1313-13-9</td>
<td>24.7</td>
<td>24.7</td>
<td>25.7</td>
<td>21.8</td>
<td>18.1</td>
</tr>
<tr>
<td>Potassium Hydroxide (KOH)</td>
<td>1310-58-3</td>
<td>4.7</td>
<td>4.7</td>
<td>4.4</td>
<td>4.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>7439-97-6</td>
<td>0.422</td>
<td>0.422</td>
<td>0.382</td>
<td>0.362</td>
<td>0.285</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>7440-43-9</td>
<td>0.0006</td>
<td>0.0006</td>
<td>0.0005</td>
<td>0.0005</td>
<td>0.0004</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>7439-92-1</td>
<td>0.0068</td>
<td>0.0068</td>
<td>0.0062</td>
<td>0.0058</td>
<td>0.0046</td>
</tr>
</tbody>
</table>

3. Hazards Identification
Routes of Entry: Not applicable under normal conditions
Health Hazards: In case of leakage, will be cause itchy and/or chemical burns when direct contact with electrolyte
Hazards to Environment: Not applicable
Fire and Explosion Hazards: Not applicable

4. First-aid Measures
Skin Contact: If exposed to a leaking battery, remove contaminated clothing. Wash exposed areas with plenty of water and soap. If irritation occurs, consult a physician.
Eyes Contact: If a battery is leakage and materials contact eyes, flush immediately with running water for at least 15 minutes. Consult an ophthalmologist at once.
Inhalation: If vapor from vented or leaked batteries are inhalation, move to fresh air and get medical attention.
Ingestion: Get immediately medical attention, do not induce vomiting or give a liquid to unconscious person.

5. Fire Fighting Measures
Hazard Characteristic: Not available
Hazardous Expose to Combustion Products: In case of fire, carbon dioxide, carbon monoxide and other toxic organic substances will be generated. Do not inhale fumes and smoke.
Extinguishing Media: Dry Chemical, Foam, Water, Carbon Dioxide
Special Fire Fighting Procedures: Fire fighters should wear self-contained breathing apparatus.

6. Accidental Release Measures
Precautions: Avoid direct contact with the leaking or ruptured batteries. Avoid short circuit.
Methods for clean up: Care for well-ventilated conditions. Recycle or dispose of the materials in an appropriate way.

7. Handling and Storage
Precaution: Handling and transfer the products carefully, make sure the packing always in good condition. Damaged packing may cause batteries contact together, in this case batteries may short circuit or improperly connected, it cause batteries venting, leaking or exploding.
Storage: Store in a dry, cool and well-ventilated area.

8. Exposure Control/Personal Protection
Exposition/Technical Measures: Atmospheric vapor concentrations must be minimized by adequate ventilation.
Protection of Hands, Eyes, and Skin: None required under normal use conditions. When handling leaking batteries, use gloves and wear safety glasses to protect hands, eyes and skin.
General Safety and Hygiene Measures: Use only as directed.

9. Physical and Chemical Properties
Physical State and Appearance: Solid, Button
Odor: Odorless
Melting Point (°C): N/A
Boiling Point (°C): N/A
Vapor Pressure (kPa): N/A
Critical Temperature (°C): N/A
Partition Coefficient: N/A
Ignition Temperature (°C): N/A
Solubility in Water: N/A
pH: N/A
Specific Gravity (H₂O=1): N/A
Vapor Density (Air=1): N/A
Heat of Combustion (kJ/mol): N/A
Critical Pressure (MPa): N/A
Flash Point (°C): N/A
Explosion Limit % (V/V): N/A
Solubility in Other Solvents: N/A

10. Stability and Reactivity
Stability: Stable
Incompatibility: Reactive with strong oxidizing agents
Condition to Avoid: Avoid shorting, mechanical & thermal abuse
Hazardous Polymerization: Will not occur
Hazardous Decomposition: None

11. Toxicological Information
Note: Since the materials in this battery are sealed in the can, the potential for exposure to the components of the battery is negligible, when the battery is used as directed. However technical or electrical abuse of the battery may result in the release of battery contents.
Toxicity to Animals: Not applicable
12. **Ecological Information**
This product has not been tested for environmental effects.

13. **Disposal Consideration**
Dispose in accordance with Federal, States and local regulations.

14. **Transport Information**
Zinc Silver Oxide Dry Battery is unregulated for purpose of transportation by U.S. Department of Transportation (DOT), International Civil Aviation Administration (ICAAA), International Air Transport Association (IATA) and the International Maritime Dangerous Goods regulations (IMDG). The only DOT requirement for shipping these batteries is Special Provision 130 which states: “Batteries, dry, are not subject to the requirements of this subchapter only when they are offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals).” The only requirements for shipping these batteries by ICAO and IATA is Special Provision A123 which states: “An electrical battery or battery powered device having the potential of dangerous evolutions of heat that is not prepared so as to prevent a short-circuit (e.g. in the case of batteries, by the effective insulation of exposed terminals; or in the case of equipment, by disconnection of the battery and protection of exposed terminals) is forbidden from transportation. “The International Maritime Dangerous Goods Code (IMDG) regulate them for ocean transportation under Special Provision 304 which says: “Batteries, dry, containing corrosive electrolyte which will not flow out of the battery if the battery case is cracked are not subject to the provisions of this Code provided the batteries are securely packed and protected against short-circuits. Examples of such batteries are: alkaline-manganese, zinc-carbon, nickel metal hydride and nickel-cadmium batteries”
The requirements for shipping these batteries, in all modes of transportation, are that they be separated from each other to prevent short-circuits and to prevent movement that could lead to short-circuits. Products must also be packed in strong packaging that can withstand the rigors normal to transportation.

15. **Regulatory Information**

<table>
<thead>
<tr>
<th>Chemical</th>
<th>EEC (2006_66_EC) wt%</th>
<th>RoHS** (2002_95_EC) mg/kg</th>
<th>TCLP (Toxic Characteristics Leaching Procedure) mg/kg</th>
<th>US Public Law*** mg/cell</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mercury (Hg)</td>
<td>&lt;0.0005%*</td>
<td>1000mg/kg</td>
<td>0.2</td>
<td>25</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>&lt;0.002%</td>
<td>100mg/kg</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>&lt;0.4%</td>
<td>1000mg/kg</td>
<td>5</td>
<td>-</td>
</tr>
</tbody>
</table>

Notes:
* Button cells with a mercury content of no more than 2% by weight is exempted (Article 4, 2006/66/ec)
** Quoted limit is referred to RoHS Directive 2002/95EC and 2005/618/EC. According to the

document of Frequently Asked Questions on RoHS and WEEE published from European Commission in May 2005, the battery does not apply to RoHS Directive.

*** According to the US Mercury-Containing Battery Management Act. Public Law No.104-142 (1996) SEC 204 Zinc-Carbon battery should not contains mercury that was intentionally introduced.

16. Other information
Do not heat or dispose of in fire. Do not recharge or disassemble the battery.

Notice to reader:
The information contained in this MSDS was obtained from current and reliable sources, however, the data is provided without any warranty, expressed or implied, regarding its correctness or accuracy. Since the conditions or handling, storage and disposal of this product are beyond the control of Chung Pak, Chung Pak will not be responsible for loss, injury, or expense arising out of the products improper use. No warranty, expressed or inferred, regarding the product described in this MSDS shall be created or inferred by any statement in this MSDS. Various government agencies may have specific regulations regarding the transportation, handling, storage, use, or disposal of this product, which may not be covered by this MSDS. The user is responsible for full compliance.

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