Material Safety Data Sheet

Section 1- Chemical Product and Company Identification

Product Identification: Li-Polymer Battery
Fax: +86-756-8596577
Preparation Date: January 7, 2016
Reference Number: SN201601002

Section 2 – Hazards Identification

<table>
<thead>
<tr>
<th>Preparation hazards and classification</th>
<th>Not dangerous with normal use. Do not dismantle, open or shred Li-Ion Battery. Exposure to the ingredients contained within or their combustion productscould be harmful.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance, Color, and Odor</td>
<td>Solid object with no odor, no color.</td>
</tr>
<tr>
<td>Primary Route(s) of Exposure</td>
<td>These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact</td>
</tr>
</tbody>
</table>
| Potential Health Effects:             | ACUTE (short term): see Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.  
Inhalation: Inhalation of materials from a sealed battery is not an expected route of exposure. Vapors or mists from a ruptured battery may cause respiratory irritation.  
Ingestion: Swallowing of materials from a sealed battery is not an expected route of exposure. Swallowing the contents of an open battery can cause serious chemical burns of mouth, esophagus, and gastrointestinal tract.  
Skin: Contact between the battery and skin will not cause any harm. Skin contact with contents of an open battery can cause severe irritation or burns to the skin.  
Eye: Contact between the battery and the eye will not cause any harm. Eye contact with contents of an open battery can cause severe irritation or burns to the eye. |


### CHRONIC (long term): see Section 11 for additional toxicological data

<table>
<thead>
<tr>
<th>Medical Conditions Aggravated by Exposure</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reported as carcinogen</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Section 3 – Composition/Information on Ingredients

Li-Polymer Battery is a mixture.

<table>
<thead>
<tr>
<th>Hazardous Ingredients (Chemical Name)</th>
<th>Concentration or concentration ranges (%)</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Foil (Al)</td>
<td>5%</td>
<td>7429-90-5</td>
</tr>
<tr>
<td>Copper Foil (Cu)</td>
<td>10%</td>
<td>7440-50-8</td>
</tr>
<tr>
<td>Cobalt lithium dioxide (CoO2.Li)</td>
<td>40%</td>
<td>12190-79-3</td>
</tr>
<tr>
<td>Graphite (C)</td>
<td>20%</td>
<td>7782-42-5</td>
</tr>
<tr>
<td>Electrolyte</td>
<td>15%</td>
<td>N/A</td>
</tr>
<tr>
<td>Aluminium plastic film</td>
<td>5%</td>
<td>N/A</td>
</tr>
<tr>
<td>PCB</td>
<td>5%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Labeling according to EC directives.
No symbol and risk phrase are required.
Note: CAS number is Chemical Abstract Service Registry Number.
N/A=Not apply.

### Section 4 – First-aid Measures

<table>
<thead>
<tr>
<th>Inhalation</th>
<th>If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard.</td>
</tr>
</tbody>
</table>
Eye contact

If eye contact with contents of an open battery occurs, immediately flush the contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility.

Ingestion

If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility.

Section 5 – Fire-fighting Measures

<table>
<thead>
<tr>
<th>Flammable Properties</th>
<th>In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suitable extinguishing Media</td>
<td>Use extinguishing media suitable for the materials that are burning.</td>
</tr>
<tr>
<td>Unsuitable extinguishing Media</td>
<td>Not available</td>
</tr>
</tbody>
</table>

Sensitivity to Mechanical Impact: This
**Data**

- may result in rupture in extreme cases

**Sensitivity to Static Discharge:** Not Applicable

**Specific Hazards arising from the chemical**

- Fires involving li-polymer battery can be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire.

**Protective Equipment and precautions for firefighters**

- As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

| NFPA | Health: 0 Flammability: 0 Instability: 0 |

### Section 6 – Accidental Release Measures

<table>
<thead>
<tr>
<th>Personal Precautions, protective equipment, and emergency procedures</th>
<th>Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Precautions</td>
<td>Prevent material from contaminating soil and from entering sewers or waterways.</td>
</tr>
<tr>
<td>Methods and materials for Containment</td>
<td>Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately.</td>
</tr>
<tr>
<td>Methods and materials for cleaning up</td>
<td>Absorb spilled material with an inert absorbent (dry sand or earth). Scoop contaminated absorbent into an acceptable waste container. Collect all contaminated absorbent and dispose of according to directions in Section 13. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.</td>
</tr>
</tbody>
</table>
## Section 7 – Handling and Storage

<table>
<thead>
<tr>
<th>Handling</th>
<th>Don't handle Li-Polymer Battery with metalwork. Do not open, disassemble, crush or burn battery. Ensure good ventilation/exhaustion at the workplace. Prevent formation of dust. Information about protection against explosion and fires: Keep ignition sources away—Do not smoke.</th>
</tr>
</thead>
</table>

## Section 8 – Exposure Controls and Personal Protection

<table>
<thead>
<tr>
<th>Engineering Controls</th>
<th>Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.</th>
</tr>
</thead>
</table>
| Personal Protective Equipment | **Respiratory Protection:** Not necessary under normal conditions.  
**Skin and body Protection:** Not necessary under normal conditions. Wear neoprene or nitrile rubber gloves if handling an open or leaking battery.  
**Hand protection:** Wear neoprene or natural rubber material gloves if handling an open or leaking battery.  
**Eye Protection:** Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery. |
| Other Protective Equipment | Have a safety shower and eye wash fountain readily available in the immediate work area. |
| Hygiene Measures | Do not eat, drink, or smoke in work area. Maintain good housekeeping. |

## Section 9 - Physical and Chemical Properties

| Physical State | Form: Solid  
Color: Silvery white  
Odor: Monotony |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in condition:</td>
<td></td>
</tr>
</tbody>
</table>
pH, with indication of the concentration | Not applicable
Melting point/freezing point | Not available.
Boiling Point, initial boiling point and Boiling range: | Not available.
Flash Point | Not available.
Upper/lower flammability or explosive limits | Not available.
Vapor Pressure: | Not applicable
Vapor Density: (Air = 1) | Not applicable
Density/relative desity | Not available.
Solubility in Water: | Insoluble
n-octanol/water partition coefficient | Not available.
Auto-ignition temperature | 130°C
Decomposition temperature | Not available.
Odout threshold | Not available.
Evaporation rate | Not available.
Flammability (soil, gas) | Not available.
Viscosity | Not applicable

**Section 10 - Stability and Reactivity**

| Stability | The product is stable under normal conditions.
| Conditions to Avoid (e.g. static discharge, shock or vibration) | Do not subject Li-Polymer Battery to mechanical
shock.
Vibration encountered during transportation
does not cause leakage, fire or explosion.
Do not disassemble, crush, short or install
with incorrect polarity. Avoid mechanical or
electrical abuse.

| Incompatible Materials | Not Available
| Hazardous Decomposition Products | This material may release toxic fumes if burned or exposed to fire
| Possibility of Hazardous Reaction | Not Available

**Section 11 - Toxicological Information**
Irritation

Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, irritation to the skin, eyes and respiratory tract may occur.

Sensitization  Not Available
Neurological Effects  Not Available
Teratoaenicity  Not Available
Reproductive Toxicity  Not Available
Mutagenicity (Genetic Effects)  Not Available
Toxicologically Synergistic Materials  Not Available

Section 12 - Ecological Information

General note:

Water hazard class 1 (Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

Anticipated behavior of a chemical product in environment/possible environmental impact/ecotoxicity  Not Available
Mobility in soil  Not Available
Persistence and Degradability  Not Available
Bioaccumulation potential  Not Available
Other Adverse Effects  Not Available

Section 13 – Disposal Considerations

Product disposal recommendation: Observe local, state and federal laws and regulations.
Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don’t disassemble the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.
Section 14 – Transport Information

Comply with the UN Recommendations on the Transport of Dangerous Goods; IATA Dangerous Goods regulations, and applicable U.S. DOT regulations for the safe transport of Li-Ion Battery. The Battery have been tested under provisions of the UN Manual of Tests and Criteria, Part III, sub-section 38.3 and are classified as non-dangerous goods.

Lithium ion cell/battery:
- lithium ion cell/battery = UN3480 with Section II of PI965
- lithium ion cell/battery packed with equipment = UN3481 with Section II of PI966
- Lithium ion cell/battery contained in equipment = UN3481 with Section II of PI967

Lithium ion:
- Content in Watt-hour (Wh) AND
  - lithium ion cell = less than 20Wh per cell
  - lithium ion battery = less than 100Wh per battery

Transport fashion:
- Land transport ADR/RID (cross-border)
- Sea transport IMDG
- Air transport ICAO-TI and IATA-DGR

Li-Ion Battery according to NEW PACKING INSTRUCTION 965-970 of IATA DGR 57th Edition of transportation.

Section 15 - Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)
- Hazardous V Non-hazardous

Section 16 - Other Information

This information has been compiled from sources considered to be dependable and is to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

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