MATERIAL SAFETY DATA SHEET

SECTION 1 PRODUCT IDENTIFICATION

- **Product Identification**
  - Polymer Lithium-Ion Rechargeable Battery
  - Nominal PACK Capacity: 2960mAh
  - PACK P/N: CSP289791PA
  - Nominal Cell Capacity: 2960mAh
  - Cell P/N: PP289791AB
  - Customer Model Name: CSP289791PA
  - Cell UL No: 86 - 22 - 83710366
  - PACK UL No: 86 - 22 - 83710366
  - Customer P/N: 1:
  - Customer Model Name:

- **Manufacture Identification**
  - Tianjin Lishen Battery Joint-Stock CO. LTD.
  - 6 Lanyuan Road, Huayuan Hi-Tech Industry Park, Tianjin 300384, China
  - Phone Number (For Information): 86 - 22 - 83710366
  - Emergency Phone Number: Telex'
  - Internet Address: http://www.lishen.com.cn

Note: Blank spaces are not permitted. If any item is not applicable or no information is available, the space must be marked to indicate that.

SECTION 2 HAZARDS IDENTIFICATION

- **Primary Routes of Entry**
  - Inhalation
  - Ingestion
  - Skin Absorption
  - Eye Contact

- **Inhalation**
  - NTP: Not listed
  - OSHA: Not listed

- **Ingestion**
  - NTP: Not listed
  - OSHA: Not listed

- **Skin Absorption**
  - NTP: Not listed
  - OSHA: Not listed

- **Eye Contact**
  - NTP: Not listed
  - OSHA: Not listed

- **Other Limit(s) for Exposure**
  - OSHA ACGIH PEL TLV
  - Lithium Cobalt: 41%
  - Lithium Hexafluorophosphate: 21%
  - Graphite Carbon: 21%
  - Organic solvent: 4%
  - Total: 100%

- **Health Hazards**
  - All chemicals are contained in a sealed can. Risk of exposure occurs only if the battery is mechanically or electrically abused (mechanical, thermal, electrical), which leads to the rupture of the battery container. Electrolyte leakage, electrode material reaction with moisture/water or battery vent/fire may follow, depending upon the circumstances.

- **Medical Conditions Generally Aggravated By Exposure**
  - An acute exposure will not generally aggravate any medical condition.

- **Symptoms of Exposure**
  - Skin contact, no effect under routine handling and use.
  - Eye Contact
    - No effect under routine handling and use
  - Skin Contact
    - No effect under routine handling and use
  - Inhalation
    - No

- **Reported as carcinogen**
  - Not applicable

SECTION 3 COMPOSITION & INFORMATION ON INGREDIENTS

- **Equivalent Lithium content per cell**
  - lithium

<table>
<thead>
<tr>
<th>COMPONENTS/Chemical Name and Common Names</th>
<th>%</th>
<th>OSHA</th>
<th>ACGIH</th>
<th>NFPA</th>
<th>HESSBERG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium Cobalt</td>
<td>41%</td>
<td>12190-79-3</td>
<td>2</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Lithium Hexafluorophosphate</td>
<td>21%</td>
<td>7782-42-5</td>
<td>2</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Graphite Carbon</td>
<td>21%</td>
<td>7782-42-5</td>
<td>2</td>
<td>4</td>
<td>100</td>
</tr>
<tr>
<td>Organic solvent</td>
<td>4%</td>
<td>20036-00-2</td>
<td>2</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>

- **Non-Hazardous Ingredients (tabs, pouch, separator, etc.)**
  - 21%

- **Total**
  - 100%

SECTION 4 FIRST-AID MEASURES

- **In case of eye contact**, flush with lot of water for 15 minutes, and get medical help.
- **In case of skin contact** with contents of battery, flush immediately with water.
- **In case of light inhalation**, move to an area with flash air immediately, if irritation persists, get medical help.
- **In case of ingestion**, drink milk/water to induce vomiting and wash out, get medical help.

SECTION 5 FIREFIGHTING MEASURES

- **Extinguisher Media**: CO2 or dry chemical power

- **Special Fire-Fighting Procedures**
  - In case of fire in cell original containers, use CO2 or dry chemical extinguisher; For fire in an adjacent area, water can be used.

SECTION 6 ACCIDENTAL RELEASE MEASURES

- **On Land**
  - Place material into suitable containers, if the skin has come into contact with the electrolyte, it should be washed thoroughly with water, sand or earth should be used to absorb any exuded material. Deal leaking battery and contaminated absorbent material should be treated by local regulation, and call local fire/police department to ask for help.

- **In Water**
  - If possible, remove from water far from body in special fixture, and call local fire/police department to ask for help.
**SECTION 7  HANDLING AND STORAGE**

**Handling:**
- Take all precautions mentioned in this document and operate the battery within the temperature range of -20°C and 45°C.
  - No special protective clothing required for handling individual cells in corrective operational method.
  - Improper handling of lithium ion battery may result in injury or damage from electrolyte leakage, heating, ignition or explosion. So do not crush, pierce, short cell/battery terminals with conductive material; Do not directly heat or solder; do not throw into fire; do not place cell/battery in non

**Storage:**
- Store the battery in a cool, drying place, without chemical vapor or excessive humidity.

**SECTION 8  EXPOSURE CONTROLS & PERSONAL PROTECTION**

**Engineering Controls:**
- Keep away from heat and open flame, prevent hard & sharp thing penetration, store in a cool & dry place.

**Personal Protection:**
- Respiratory Protection: Not necessary under normal operations condition. SCBA required in the event of a fire.
- Eye/Face Protection: Not necessary under normal operation condition.
- Glove protection: Not necessary under normal operation condition.
- Foot Protection: Steel toed shoes recommended for large container handling.

**Ventilation to Be Used**
- Local Exhaust: Not necessary under conditions of Normal use.
- Mechanical (General): Not necessary under conditions of Normal use.
- Other (Specify): Not necessary under normal operation conditions.

**Other Protective Clothing and Equipment**
- Not necessary under normal operation conditions.

**Hygienic Work Practices**
- Not necessary under normal operation conditions.

**SECTION 9  PHYSICAL/ CHEMICAL PROPERTIES**

- Specific Gravity (H2O=1): 
  - LiCoO2: 3.80
  - Graphite: 2.0-2.2

- Melting Point:
  - LiCoO2: 1130°C
  - Graphite: 2.0-2.2
  - Graphite: 3500-3900°C

- Appearance and Odor:
  - LiCoO2 is a gray odorless power;
  - Graphite is a black or odorless power;
  - Organic solvent is a colorless liquid;
  - Lithium salt is a white, crystalline and odorless power.

**SECTION 10  STABILITY & REACTIVITY DATA**

**Stability:**
- Stable: Do not heat or incinerate the battery. Never impact, pierce or crush the battery.
- Unstable: Do not charge the battery under high temperature conditions such as near a fire or in the direct sunlight.

**Incompatibility (Materials to Avoid):**
- Water, salted water, other solvent with water

**Hazardous Decomposition Products**
- N/A

**Potential for Hazardous Polymerization:**
- May Occur: Conditions to Avoid
  - Do not allow the battery to get wet or be immersed in water.

**SECTION 11  TOXICOLOGICAL INFORMATION**

- This product does not elicit toxicological properties during routine handling and use.

**SECTION 12  ECOLOGICAL INFORMATION**

- Cobalt and its compounds can pose a threat if released to environment. The detail information are showed in waste disposal method in Section 13 "Disposal Consideration".
SECTION 13  DISPOSAL CONSIDERATIONS

There is no contamination during normal operation and use. Lithium batteries should have their terminals insulated prior to disposal, do not throw away a used battery and provide them for recycling company.

Open cells should be treated as hazardous waste, if the leakage or other material is released, they should take actions as follows:
- Leave the area, allow the batteries to cool down, let the vapors to dissipate.
- Avoid skin and eye contact or inhalation of vapors.
- Remove spill liquid with absorbent and incinerate after.

Waste Disposal method: Opened cells should be treated as hazardous waste.

SECTION 14  TRANSPORTATION

Lishen’s DAP574868PA Lithium-Ion Polymer batteries are considered to be "Rechargeable Lithium Ion Polymer Batteries" and meet the requirements of transportation by the United States Department of Transportation (DOT), International Civil Aviation Administration (ICAO), International Air Transportation Association (IATA) special provision UN3480 as "non-dangerous goods" or "non-hazardous materials". These lithium batteries can be transported in nonrestrictive material and as Non-Dangerous Goods as they meet all the requirements in below:

- Lithium content requirement
- For the bar cells, the lithium content can not overpass 20Wt/h;
- For the batteries, the lithium content can not overpass 100Wt/h;
- Meet with UN Test Requirement
- All the cell and battery must be verified to meet with all the requirements in Part 3 - 38.3 Item (UN38.3 tests) for "Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria".
- Package Requirement
- The cell and battery must be packaged specially and singly, and put into hard outer package to prevent short-circuit if they do not be assembled in finished equipments (such as mobile phone, camera, NBPC, and so on);
- The cell quantity is more than 24pcs or the battery quantity is more than 12pcs, they must be asked to meet with the requirements in blow besides they are assembled in finished equipment.
- Every package must be marked in the content that the packages are loaded in lithium cells or batteries, also add new lithium iron operation label, also need point out the corrective actions when the packages are damaged.
- Every package must pass 1.2mm fall test in any direction. No damage for the cells and batteries, no move and touch together, no cells or batteries escape from the package.
- Every package weight can not overpass 10kg if the batteries can not be assembled in finished equipment.

SECTION 15  REGULATORY INFORMATION


SECTION 16  OTHER INFORMATION

There is no hazards in accordance with the UN recommendations test (UN manual of tested and criteria 38.3)

<table>
<thead>
<tr>
<th>Test NO</th>
<th>Test Item</th>
<th>Criteria</th>
<th>Result</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>38.3.4.1</td>
<td>Altitude Test</td>
<td>No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.2</td>
<td>Thermal Test</td>
<td>No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.3</td>
<td>Vibration</td>
<td>No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.4</td>
<td>Shock</td>
<td>No mass loss, leakage, venting, disassembly, rupture, and fire. OCV should not be less than 90% before testing</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.5</td>
<td>External Short Circuit</td>
<td>External temperature should not exceed 175degC.</td>
<td>Passed</td>
<td>Only for battery</td>
</tr>
<tr>
<td>38.3.4.6</td>
<td>Impact</td>
<td>External temperature should not exceed 175degC.</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.7</td>
<td>Overcharge</td>
<td>No disassembly, and fire within seven days of this test.</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.8</td>
<td>Forced Discharge</td>
<td>No disassembly, and fire within seven days of this test.</td>
<td>Passed</td>
<td></td>
</tr>
</tbody>
</table>