MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT IDENTIFICATION

Product Identification

Polymer Lithium-Ion Rechargeable Battery
Nominal PACK Capacity: 2960mAh
Nominal Voltage: 3.7V
Cell P/N: PP289791AB
Nominal Cell Capacity: 2960mAh
Cell UL NO: CSP289791PA
PACK UL NO: CSP289791PA
Nominal PACK Capacity: 2060mAh

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: 86 - 22 - 83710366

Customer Model Name:
Cell P/N: PP289791AB
Customer P/N: 1
PACK P/N: CSP289791PA

SECTION 2 - HAZARDS IDENTIFICATION

Primary Routes of Entry

Inhalation: Ingestion: Skin Absorption: Eye contact: LARC Monograph: OSHA
OSHA ACGIH
OTHER LIMITS
PEL TLV
41%
7782-42-5
21%
21324-40-3
4%
20%
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 materials 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

Ingestion

No effect under routine handling and use


SECTION 3 - COMPOSITION & INFORMATION ON INGREDIENTS

Equivalent lithium content per cell

Total

88%

COMPONENTS-Chemical Name and Common Names

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lithium Cobalt</td>
<td>7440-59-7</td>
</tr>
<tr>
<td>Graphite Carbon</td>
<td>7618-84-6</td>
</tr>
<tr>
<td>Lithium Hexafluorophosphate</td>
<td>7782-42-5</td>
</tr>
<tr>
<td>Organic solvent</td>
<td>23360-98-5</td>
</tr>
<tr>
<td>Non-hazardous ingredients</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

SECTION 4 - FIRST-AID MEASURES

If exposure to internal materials in cell due to damaged outer casing, the following actions are recommended.

Eye Contact

In case of eye contact, flush with lot of water for 15 minutes, and get medical help.

Skin Contact

In case of skin contact with contents of battery, flush immediately with water.

Inhalation

In case of light inhalation, move to an area with flash air immediately, if irritation persists, get medical help.

Ingestion

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 spilled 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:
- Keep all precautions mentioned in this document and operate the battery within the temperature range of -20°C and 45°C.
- Use special protective clothing required when 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. 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-suitable environment.

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

SECTION 8  EXPOSURE CONTROLS & PERSONAL PROTECTION

Engineering Controls:
- Keep away from heat and open flame, prevent hard and 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.

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

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 disassemble or modify the battery.

Conditions to Avoid:
- Do not charge the battery under high temperature conditions such as near a fire or in direct sunlight.
- Do not short-circuit the battery by connect the positive and negative terminals with a metal material.
- Do not allow the battery to get wet or be immersed in water.

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

Hazardous Decomposition Products:
- N/A

SECTION 11  TOXICOLOGICAL INFORMATION

- Do not charge the battery under high temperature conditions such as near a fire or in direct sunlight.
- Do not short-circuit the battery by connect the positive and negative terminals with a metal material.
- Do not allow the battery to get wet or be immersed in water.

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

Lithium batteries should be handled and disposed of in accordance with the regulations and guidelines of applicable authorities. Lithium batteries should be disposed of in a manner that minimizes the risk of contamination of the environment and human health.

Every package must be marked in the content that the packages are loaded in lithium cells or batteries, also need point out the corrective actions when the packages are damaged.

Every package weight can not overpass 10kg if the batteries can not be assembled in finished equipment.

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 more restrictive 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%;
- For the batteries, the lithium content can not overpass 100wt%;
- 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 need point out the corrective actions when the packages are damaged.
- Each batch shipment must be appended document which should contain the content that the packages are loaded in lithium cells or batteries, 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


Hazardous Non-hazardous

SECTION 16 OTHER INFORMATION

There is no hazards in accordance with the UN recommendations text (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, 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, 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, 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, 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 170degC. No disassembly, and fire within six hours of this test.</td>
<td>Passed</td>
<td></td>
</tr>
<tr>
<td>38.3.4.6</td>
<td>Impact</td>
<td>External temperature should not exceed 170degC. No disassembly, and fire within six hours of this test.</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>Only for battery</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>