MATERIAL SAFETY DATA SHEET

SECTION 1  PRODUCT IDENTIFICATION

Product Identification

Polymer Lithium-Ion Rechargeable Battery
Nominal PACK Capacity: 2960mAh
Nominal Voltage: 3.7V
PACK P/N: CSP289791PA
Customer P/N: 1-

Cell P/N: PP289791AB
Nominal Cell Capacity: 2960mAh
Cell UL NO: 86-22-83710366

Customer Model Name:
PACK P/N: CSP289791PA

Manufacture Identification

Tianjin Lishen Battery Joint-Stock CO. LTD. 86 - 22 - 83710366
6 Lanyuan Road, Huayuan Hi-Tech Industry Park, Tianjin 300384, China

Phone Number (For Information): 86 - 22 - 83710366
Emergency Phone Number: 86 - 22 - 83710366

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  NTP  OSHA
Skin Absorption  Eye contact  LARC Monograph  NOT Listed

OSHA ACGIH
OTHER LIMITS
PEL TLV  RECOMMENDED
41%  12190-79-3
21%  7782-42-5
4%  21324-40-3
14%  20%
100%

Equivalent lithium content per cell
0.888g

Equivalent lithium content per cell

Primary Routes of Entry

Inhalation  Ingestion  Skin Contact  Eye Contact
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

Reported as carcinogen
Not applicable

SECTION 3  COMPOSITION & INFORMATION ON INGREDIENTS

COMPONENTS-Chemical Name and Common Names
Hazardous Components 1% or greater, Carcinogens 0.1% or greater

| Chemical Name                  | %     | PEL   | TLV   | CAS Number | OSHA HAZARD |ADR Number | NIOSH LC-TR | NIOSH REL \\
<table>
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</thead>
<tbody>
<tr>
<td>Lithium Cobaltite</td>
<td>61%</td>
<td>3000</td>
<td>7782</td>
<td>20140-79-0</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Graphite Carbon</td>
<td>21%</td>
<td></td>
<td></td>
<td>7439-41-5</td>
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<tr>
<td>Lithium Hexafluorophosphate</td>
<td>4%</td>
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<td></td>
<td>21324-40-3</td>
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<tr>
<td>Organic solvent</td>
<td>14%</td>
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<tr>
<td>Non-Hazardous Ingnedients(tabs,pouch,separator etc.)</td>
<td>20%</td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>100%</td>
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</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 spilt 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. 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-protected area.

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.

SECTION 9  PHYSICAL/CHEMICAL PROPERTIES

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

Melting Point:
LiCoO2: 350°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
unstable

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

Incompatibility (Materials to Avoid)
Water, salted water, other solvent with 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, we 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 spiller liquid with absorbent and incinerate after.

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

- Incineration: incineration should never be performed by battery users but eventually by trained professionals in authorized facilities with proper gas and fume treatment.
- Landfilling: According to the proper laws and regulations in different countries or areas, the battery should be buried deeply in the specified place.
- Recycling: Send to authorized recycling facilities to get Co, Cu and Al, eventually through licensed waste carrier.

**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:

<table>
<thead>
<tr>
<th>Lithium content requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the bar cells, the lithium content can not overpass 20Wt/h;</td>
</tr>
<tr>
<td>For the batteries, the lithium content can not overpass 100Wt/h;</td>
</tr>
<tr>
<td>Meet with UN Test Requirement</td>
</tr>
<tr>
<td>All the cell and battery must be verified to meet all the requirements in Part 3 -38.3 Item (UN38.3 tests) for &quot;Recommendations on the Transport of Dangerous Goods, Manual of Tests and Criteria&quot;.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Package Requirement</th>
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</thead>
<tbody>
<tr>
<td>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).</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Every batch shipment must be appendixed 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.</td>
</tr>
<tr>
<td>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.</td>
</tr>
<tr>
<td>Every package weight can not overpass 10kg if the batteries can not be assembled in finished equipment.</td>
</tr>
</tbody>
</table>

**SECTION 15  REGULATORY INFORMATION**

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>☑ Hazardous</td>
</tr>
<tr>
<td>☑ Non-hazardous</td>
</tr>
</tbody>
</table>

**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>Pack Part Number</th>
<th>K.BP289791PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>3.7V</td>
</tr>
<tr>
<td>Nominal Pack Capacity</td>
<td>2960mAh</td>
</tr>
<tr>
<td>Pack Mass</td>
<td>85g</td>
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</tbody>
</table>

<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>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>38.3.4.4</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 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. Only for battery</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>
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</tbody>
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