1. Chemical Product and Company Identification

Product Identification
INR18650 MH1 (3200mAh, 3.7V) Lithium-Ion Battery.

Manufacturer
LG Chemical Limited
Twin Tower
Youido-Dong, Youngdeungpo-Ku
Seoul, Korea

Emergency Telephone Number
82-2-3773-7256

2. Composition Information

<table>
<thead>
<tr>
<th>Hazardous Ingredients</th>
<th>%</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum Foil</td>
<td>2-10</td>
<td>7429-90-5</td>
</tr>
<tr>
<td>Nickel compound (proprietary)</td>
<td>0-80</td>
<td></td>
</tr>
<tr>
<td>Manganese compound (proprietary)</td>
<td>0-15</td>
<td></td>
</tr>
<tr>
<td>Cobalt compound (proprietary)</td>
<td>0-15</td>
<td></td>
</tr>
<tr>
<td>Styrene-Butadiene-Rubber</td>
<td>&lt;1</td>
<td></td>
</tr>
<tr>
<td>Polyvinylidene Fluoride (PVDF)</td>
<td>&lt;5</td>
<td>24937-79-9</td>
</tr>
<tr>
<td>Copper Foil</td>
<td>2-10</td>
<td>7440-50-8</td>
</tr>
<tr>
<td>Carbon (proprietary)</td>
<td>10-30</td>
<td>7440-44-0</td>
</tr>
<tr>
<td>Electrolyte (proprietary)</td>
<td>10-20</td>
<td></td>
</tr>
<tr>
<td>steel, Nickel and inert materials</td>
<td>Remainder</td>
<td>N/A</td>
</tr>
</tbody>
</table>
3. Hazards Identification

Primary routes of entry

- Skin contact: NO
- Skin absorption: NO
- Eye contact: NO
- Inhalation: NO
- Ingestion: NO

Symptoms of exposure

Emergency Overview

May explode in a fire, which could release hydrogen fluoride gas. Use extinguishing media suitable for materials burning in fire.

- Skin contact
  No effect under routine handling and use.

- Skin absorption
  No effect under routine handling and use.

- Eye contact
  No effect under routine handling and use.

- Inhalation
  No effect under routine handling and use.

- Reported as carcinogen
  Not applicable
4. **First Aid Measures**

**Inhalation**
Not a health hazard.

**Eye contact**
Not a health hazard.

**Skin contact**
Not a health hazard.

**Ingestion**
If swallowed, obtain medical attention immediately.

**IF EXPOSURE TO INTERNAL MATERIALS WITHIN CELL DUE TO DAMAGED OUTER CASING, THE FOLLOWING ACTIONS ARE RECOMMENDED:**

**Inhalation**
Leave area immediately and seek medical attention.

**Eye contact**
Rinse eyes with water for 15 minutes and seek medical attention.

**Skin contact**
Wash area thoroughly with soap and water and seek medical attention.

**Ingestion**
Drink milk/water and induce vomiting; seek medical attention.
5. **Fire Fighting Measures**

**General Hazard**
Cell is not flammable but internal organic material will burn if the cell is incinerated. Combustion products include, but are not limited to hydrogen fluoride, carbon monoxide and carbon dioxide.

**Extinguishing Media**
Use extinguishing media suitable for the materials that are burning.

**Special Firefighting Instructions**
If possible, remove cell(s) from fire fighting area. If heated above 125°C, cell(s) may explode/vent.

**Firefighting Equipment**
Use NIOSH/MSHA approved full-face self-contained breathing apparatus (SCBA) with full protective gear.

6. **Accidental Release Measures**

**On Land**
Place material into suitable containers and call local fire/police department.

**In Water**
If possible, remove from water and call local fire/police department.

7. **Handling and Storage**

**Handling**
No special protective clothing required for handling individual cells.

**Storage**
Store in a cool, dry place.
8. **Exposure Controls / Personal Protection**

**Engineering controls**
Keep away from heat and open flame. Store in a cool dry place.

**Personal Protection**

*Respirator*
Not required during normal operations. SCBA required in the event of a fire.

*Eye/face protection*
Not required beyond safety practices of employer.

*Gloves*
Not required for handling of cells.

*Foot protection*
Steel toed shoes recommended for large container handling.

9. **Physical and Chemical Properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Solid</td>
</tr>
<tr>
<td>Odor</td>
<td>N/A</td>
</tr>
<tr>
<td>PH</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>N/A</td>
</tr>
<tr>
<td>Vapor density</td>
<td>N/A</td>
</tr>
<tr>
<td>Boiling point</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility in water</td>
<td>Insoluble</td>
</tr>
<tr>
<td>Specific gravity</td>
<td>N/A</td>
</tr>
<tr>
<td>Density</td>
<td>N/A</td>
</tr>
</tbody>
</table>
10. **Stability and Reactivity**

**Reactivity**
None

**Incompatibilities**
None during normal operation. Avoid exposure to heat, open flame, and corrosives.

**Hazardous Decomposition Products**
None during normal operating conditions. If cells are opened, hydrogen fluoride and carbon monoxide may be released.

**Conditions To Avoid**
Avoid exposure to heat and open flame. Do not puncture, crush or incinerate.

11. **Toxicological Information**

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

<table>
<thead>
<tr>
<th>Sensitization</th>
<th>Teratogenicity</th>
<th>Reproductive toxicity</th>
<th>Acute toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>NO</td>
<td>NO</td>
<td>NO</td>
</tr>
</tbody>
</table>

If the cells are opened through misuse or damage, discard immediately. Internal components of cell are irritants and sensitizers.

12. **Ecological Information**

Some materials within the cell are bioaccumulative. Under normal conditions, these materials are contained and pose no risk to persons or the surrounding environment.
13. **Disposal Considerations**

California regulated debris

RCRA Waste Code : Nonregulated

Dispose of according to all federal, state, and local regulations.

14. **Transport Information**

Lithium Ion batteries are considered to be "Rechargeable batteries" and meet the requirements of transportation by the U.S. Department of Transportation(DOT), the International Civil Aviation Administration(ICAO), the International Maritime Dangerous Goods (IMDG) Code.

Even classified as lithium ion batteries (UN3480), 2016 IATA Dangerous Goods Regulations 57th edition Packing Instruction 965 Section IB or II is applied.

The general and additional requirements apply to all lithium ion cells and batteries prepared for transport according to this packing instruction:

1) Section IB applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities that exceed the allowance permitted in Section II, Table 965-II; and

2) Section II applies to lithium ion cells with a Watt-hour rating not exceeding 20 Wh and lithium ion batteries with a Watt-hour rating not exceeding 100 Wh packed in quantities not exceeding the allowance permitted in Section II, Table 965-II.
Cells and/or batteries specified in columns 2, 3 and 4 of Table 965-II must not be combined in the same package.

Each cell or battery is of the type proven to meet the requirements of each test in the UN Manual of Tests and Criteria Part 3 subsection 38.3.

The product has been evaluated according to the UN Manual of Tests and Criteria.

<table>
<thead>
<tr>
<th>No.</th>
<th>Test Item</th>
<th>Criteria</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test 1</td>
<td>Altitude simulation</td>
<td>- After OCV (%) ≥ 90%</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- No leakage, no venting, no disassembly, no rupture, no fire</td>
<td></td>
</tr>
<tr>
<td>Test 2</td>
<td>Thermal test</td>
<td>- Mass loss limit (leakage)</td>
<td>Pass</td>
</tr>
<tr>
<td>Test 3</td>
<td>Vibration</td>
<td>1) If M&lt;1g, less than 0.5%,</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) If 1g≤M≤75g, less than 0.2%,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) If M&gt;75g, less than 0.1%</td>
<td></td>
</tr>
<tr>
<td>Test 4</td>
<td>Shock</td>
<td>- No disassembly, no rupture, no fire within 6 hours after the test</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Max. Temp ≤ 170°C</td>
<td></td>
</tr>
<tr>
<td>Test 5</td>
<td>External short circuit</td>
<td>- No disassembly, no fire within 6 hours after the test</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Max. Temp ≤ 170°C</td>
<td></td>
</tr>
<tr>
<td>Test 6</td>
<td>Impact or Crush</td>
<td>- No disassembly, no fire within 6 hours after the test</td>
<td>Pass</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Max. Temp ≤ 170°C</td>
<td></td>
</tr>
<tr>
<td>Test 7</td>
<td>Overcharge</td>
<td>- No disassembly, no fire within 7 days after the test</td>
<td>Pass</td>
</tr>
<tr>
<td>Test 8</td>
<td>Forced discharge</td>
<td>- No disassembly, no fire within 7 days after the test</td>
<td>Pass</td>
</tr>
</tbody>
</table>

15. **Regulatory Information**

This product is not hazardous under the criteria of the Federal Occupational Safety and Health Administration(OSHA) Hazard Communication Standard.(29 CFR 1910.1200)


[ ] Hazardous  [ ] Non-hazardous