

# MATERIAL SAFETY DATA SHEET

**Product Name** : Cylindrical lithium ion battery

**Applicant** : Henan Xintaihang Power Source Co., Ltd.

**Address** : Chemistry and Physics Power Source Industrial Park,  
Beihuan Road, Xinxiang City, Henan Province, P.R.  
China

Signed by Shanghai OUTAO Testing Technology Service Co., Ltd

**Written by** :



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### Section 1 – Chemical Product and Company Identification

<b>Product name</b>	Cylindrical lithium ion battery
<b>Type</b>	INR18650P-1500, INR18650P-2000, INR18650P-2200, INR18650P-2500, INR18650P-3000, INR18650-2000, INR18650-2200, INR18650-2300, INR18650-2500, INR18650-2600, INR18650-3000
<b>Applicant</b>	Henan Xintaihang Power Source Co., Ltd.
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### Section 2 – Hazards Identification

Do not short circuit, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product. Risk of fire or explosion. The rechargeable lithium-ion batteries described in this Product Safety Data Sheet are sealed units which are not hazardous when used according to the recommendations of the manufacturer.

Under normal conditions of use, the electrode materials and liquid electrolyte they contain are not exposed to the outside, provided the battery integrity is maintained and seals remain intact. Risk of exposure only in case of abuse (mechanical, thermal, electrical) which leads to the activation of safety valves and/or the rupture of the battery container. Electrolyte leakage, electrode materials reaction with moisture/water or battery vent/explosion/fire may follow, depending upon the circumstances.

In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns to skin and eyes.

#### Potential Health Effects

<b>Eye</b>	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.
<b>Skin</b>	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.
<b>Ingestion</b>	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.
<b>Inhalation</b>	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.



Environmental effects

Since a battery cell remains in the environment, do not throw out it into the environment.

### Section 3 – Composition/Information on Ingredient

Composition	CAS No.	EINECS No.	Weight %
Nickel cobalt lithium manganite	Not assigned	Not assigned	42±3
Conductive carbon black	1333-86-4	231-153-3	1.5±0.5
Thickener	Not assigned	Not assigned	0.5±0.3
Polyvinylidene Fluoride (PVDF)	24937-79-9	Not assigned	1.0±0.5
Graphite	7782-42-5	231-955-3	20±3
Lithium Hexafluorophosphate	21324-40-3	244-334-7	15±3
Aluminum	7429-90-5	231-072-3	6±2
Copper	7440-50-8	231-159-6	14±2

### Section 4 – First Aid Measures

In the event of electrolyte leakage or escape of electrolyte:

**Inhalation**

Remove victim to fresh air and keep at rest in a position comfortable for breathing.

Get medical advice/attention if you feel unwell.

**Skin contact**

Remove/Take off immediately all contaminated clothing. Gently wash with plenty of soap and water. If skin irritation or burn occurs: Get medical advice/attention.

**Eye contact**

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

**Ingestion**

Get medical advice/attention. Rinse mouth.

**Protection of first-aiders**

A rescuer should wear personal protective equipment, such as rubber gloves and airtight goggles.

### Section 5 – Fire Fighting Measures

**Specific hazards**

Lithium ion batteries contain flammable liquid electrolyte that may vent, ignite and produce sparks when subjected to high temperatures (&gt; 150 °C), when damaged or abused (e.g., mechanical damage or electrical overcharge). Burning cells can ignite other batteries in close proximity.

**Hazardous decomposition materials (under fire condition)**

Carbon monoxide, carbon dioxide, lithium oxides, hydrogen fluoride.

**Suitable extinguishing media**

Dry chemical, foam, carbon dioxide, water

**Specific methods**

Fire-extinguishing work is done from the windward and the suitable fire-extinguishing method according to the surrounding situation is used. Uninvolved persons should evacuate to a safe place. In case of fire in the surroundings: Keep containers cool by spraying with water. Eliminate all ignition sources if safe to do so.

**Special protective equipment**

When extinguishing fire, be sure to wear personal protective



for firefighters

equipment.

## Section 6 – Accidental Release Measures

Avoid contact with spilled or released material. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. See Chapter 13 for information on disposal. Observe the relevant local and international regulations

<b>Personal precautions, protective equipment and emergency procedures:</b>	As an immediate precautionary measure, isolate spill or leak area for at least 25 meters in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed areas before entering. Wear adequate personal protective equipment as indicated in Section 8.
<b>Environmental precautions</b>	Prevent material from contaminating soil and from entering sewers or waterways.
<b>Methods and materials for containment and cleaning up</b>	Stop the leak if safe to do so. 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.
<b>Prevention of secondary hazards</b>	Remove all sources of ignition. Fire-extinguishing devices should be prepared in case of a fire. Use spark-proof tools and explosion-proof equipment.

## Section 7 – Handling and Storage

<b>Handling</b>	Do not open, disassemble, crush or burn battery. Do not expose cell to temperatures outside the range of -20°C to 50°C.
<b>Storage</b>	Store battery in a dry location. To minimize any adverse affects on battery performance it is recommended that the batteries be kept at room temperature (25°C +/- 5°C). Elevated temperatures can result in shortened cell life. Keep out of reach of children.

## Section 8 – Exposure Controls, Personal Protection

<b>Engineering controls</b>	Airborne exposures to hazardous substances are not expected when product is used for its intended purpose. Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.
<b>Exposure limits</b>	No data available
<b>Personal protective equipment</b>	
<b>Respiratory protection</b>	Not necessary under normal conditions. Wear self-contained breathing apparatus (SCBA) if handling an open or leaking battery.
<b>Hand protection</b>	Not necessary under normal conditions. Wear neoprene or natural rubber gloves if handling an open or leaking battery.
<b>Eye / Face protection</b>	Not necessary under normal conditions. Wear safety glasses if



**Skin and body protection:** handling an open or leaking battery.  
Not necessary under normal conditions. Wear protective clothing and boots if handling an open or leaking battery.

### Section 9 – Physical and Chemical Properties

<b>Physical appearance(20°C)</b>	Solid
<b>Odor</b>	Odorless
<b>Odor threshold</b>	No data available
<b>pH</b>	No data available
<b>Boiling point/range</b>	No data available
<b>Melting point/range</b>	No data available
<b>Flash Point</b>	No data available
<b>Explosion Limits</b>	No data available
<b>Ignition Temperature</b>	No data available
<b>Vapour Pressure</b>	No data available
<b>Vapour Density</b>	No data available
<b>Density</b>	No data available
<b>Solubility</b>	Insoluble in water

### Section 10 – Stability and Reactivity

<b>Stability</b>	This product is stable under normal conditions.
<b>Reactivity</b>	No special reactivity has been reported.
<b>Conditions to avoid</b>	Avoid exposing the battery to fire or temperatures above 80° C. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
<b>Incompatible materials</b>	Do not immerse in seawater or other high conductivity liquids, strong oxidizers.
<b>Hazardous decomposition products</b>	This material may release toxic fumes if burned or exposed to fire. Breaching of the battery enclosure may lead to generation of hazardous fumes which may include extremely hazardous HF (hydrofluoric acid).

### Section 11 – Toxicological Information

There is no available data for the product itself. The information for the internal cell materials are as follows:

<b>Acute Toxicity</b>	Acute oral, dermal and inhalation toxicity data are not available for this article.
<b>Other Toxicity Data</b>	Risk of irritation occurs only if the battery 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.
<b>Corrosivity</b>	No data available
<b>Sensitization</b>	No data available
<b>Neurological Effects</b>	No data available

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<b>Genetic Effects</b>	No data available
<b>Reproductive Effects</b>	No data available
<b>Developmental Effects</b>	No data available
<b>Target Organ Effect</b>	No data available
<b>Carcinogenicity</b>	Normal safe handling of this product will not result in exposure to substances that are considered human carcinogens by IARC (International Agency for Research on Cancer), ACGIH (American Conference of Governmental Industrial Hygienists, OSHA or NTP (National Toxicology Program).

### Section 12 – Ecological Information

<b>Ecotoxicity</b>	No data available
<b>Persistence/ degradability</b>	Not readily biodegradable
<b>Bioaccumulative potential (BCF)</b>	No data available
<b>Mobility in soil</b>	No data available

### Section 13 – Disposal Considerations

<b>Waste Disposal Method</b>	Battery recycling is encouraged. Do NOT dump into any sewers, on the ground or into any body of water. Store material for disposal as indicated in Section 7 Handling and Storage.
<b>USA</b>	Dispose of in accordance with local, state and federal laws and regulations.
<b>Canada</b>	Dispose of in accordance with local, provincial and federal laws and regulations.
<b>EC</b>	Waste must be disposed of in accordance with relevant EC Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used.

### Section 14 – Transport Information

Lithium-ion batteries are designed to comply with all applicable shipping regulations as prescribed by industry and legal standards which includes compliance 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 lithium-ion batteries and the International Maritime Dangerous Goods Code. Each of the listed cells in Section 1 have passed the UN Manual of Tests and Criteria Part III Subsection 38.3, which is required by all of the directives listed above.

In the US, shipments of lithium ion batteries are classified as Class 9, UN3480, Packing Group II, by the U.S. Hazardous Materials Regulations (HMR). Packaging, markings and documentation requirements are defined in Title 49 of the Code of Federal Regulations (CFR), Section 173.185. of the U.S. HMR. Excepted cells and batteries are allowed to be transported within the US without Class 9 packaging and markings, but must conform to other requirements as stipulated in Special Provisions 188 and 189 in the 49 CFR Section 173.185 of the U.S. HMR.

International shipments of lithium ion cells and batteries are generally classified as Class 9, UN3480,

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