# MATERIAL SAFETY DATA SHEET

**Date**：Jan 1st, 2023
**File No.**:GP-QA-084

## 1. Identification of the substance/preparation and of the company/undertaking

Identification of the product

| | |
|---|---|
| Product name： | Lithium Ion Battery |
| Chemical System: | Li(NiCoMn)O2 |
| Model: | GSP103030 3.7V 1000mAh 3.7Wh |
| Designated for RECHARGE | X Yes __ No |

Manufacturer/supplier identification

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|---|---|
| Company： | Guangzhou Great Power Energy & Technology Co., Ltd. |
| Contact for information： | 912 Xicun Section, Shiliang Road, Shawan, Panyu, Guangzhou, GD, PRC |
| Emergency telephone No.： | 0086-20-39196888 |

## 2. Composition/information on ingredients

| Ingredient | Percent | CAS Index No./EC No. | Molar mass | Molecular formula | Symbol |
|---|---|---|---|---|---|
| Ternary Materials | 31.6% | 182442-95-1 | | LiNixCoyMn1-x-yO2 | |
| Graphite | 17.1% | 7782-42-5 | | C | |
| Organic Electrolyte | 13.2% | confidential | | | |
| Polypropylene | 2.8% | 9003-07-0 | | | |
| Copper | 6.5% | 7440-50-8 | | Cu | |
| Aluminum | 28.8% | 7429-90-5 | | Al | |

Weight of metallic lithium per cell: 0g. There is no metallic lithium in the lithium polymer battery.
The lithium polymer battery is with a Watt-hour rating ≤ 20 Wh/Cell (cell), ≤ 100 Wh (battery pack).

## 3. Hazards identification

Health Hazards (Acute and Chronic):
For the battery cell, chemical materials are stored in a hermetically sealed aluminum laminate case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials leakage.

However, if exposed to a fire, added mechanical shocks, decomposed, or added electric stress by misuse the cell case will be breached and hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid gas may be emitted.

Carcinogenicity:
NTP: None IARC Monograph: None OSHA Regulated: None

Medical Conditions Generally Aggravated by Exposure:
An acute exposure will not generally aggravate any medical condition.
Human health effects:
Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.
Skin contact: The steam of the electrolyte stimulates a skin. The electrolyte skin contact causes a sore and the stimulation on the skin.
Eye contact: The steam of the electrolyte stimulates eyes. The electrolyte eye contact causes a sore and the stimulation on the eye. Inflammation of the eyes may occur.

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

Specific hazards:
If the electrolyte contacts with water, it may generate detrimental hydrogen fluoride.
Since the leaked electrolyte is inflammable liquid, do not bring close to fire.

## 4. First aid measures

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| After inhalation contact: | Make the victim blow his/her nose, gargle. Seek medical attention if necessary. |
| After skin contact: | Remove contaminated clothes and shoes immediately. Immediately wash extraneous matter or contact region with soap and plenty of water. |
| After eye contact: | Do not rub eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention. |
| After ingestion contact: | Make the victim vomit. Immediately seek medical attention. |

## 5. Fire-fighting measures

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| Extinguishing Media: | Plenty of water, $CO_2$ gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam. |
| Specific methods of fire-fighting: | When the battery burns with other combustibles simultaneously, take fire extinguishing method which corresponds to the combustibles. Extinguish a fire from the windward as much as possible. |
| Flammable Limits: | Not available |

## 6. Accidental release measures

The preferred response is to leave the area and allow the batteries to cool and the vapors to dissipate. Avoid skin and eye contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerate.

## 7. Handling and storage

Avoid mechanical or electrical abuse. Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

## 8. Exposure controls/personal protection

Specific control parameter：
Personal protective equipment ：

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| Respiratory protection (Specify Type)： | Not necessary under conditions of normal use. |
| Ventilation: | Not necessary under conditions of normal use. |
| Protective Gloves: | Not necessary under conditions of normal use. |
| Eye protection: | Not necessary under conditions of normal use. |
| Other Protective (Clothing or Equipment): | Not necessary under conditions of normal use. |

## 9. Physical and chemical properties

Appearance

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|---|---|
| Physical state:Solid | Form:Prismatic |
| Color:Metallic color | Odor:No odor |
| PH:N/A | Specific temperatures:Temperature ranges changes in physical state occur. |
| Flash point:N/A | Explosion properties:N/A |
| Density:N/A | Solubility:with indication of the solvent(s): Insoluble in water |

## 10. Stability and reactivity

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| Stability: | Stable |
| Conditions to Avoid: | When cell is exposed to an external short-circuit, crushes, deformation, high temperature above 100 degree C, it will cause heat generation and ignition. Avoid direct sunlight and high humidity. |
| Hazardous Decomposition or By-products: | Acrid or harmful gas is emitted during fire. |
| Materials to avoid: | Conductive materials, water, seawater, strong oxidizers and strong acids. |

Hazardous polymerization will not occur.

## 11. Toxicological information

Acute toxicity：

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| Copper | 60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation. TDLo, hypodermic - Rabbit 375mg/kg |
| Organic electrolyte | LD50, oral - Rat 2,000mg/kg or more |

Further toxicological information：

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| Aluminum | By the long-term inhalation of coarse particulate or fume, it is possible to cause lung damage (aluminum lungs). |
| Lithium Cobaltate | By the long-term inhalation of coarse particulate or vapor of cobalt, it is possible to cause the serious respiratory-organs disease. Skin reaction or a lung disease for allergic or hypersensitive person may be caused. |
| Graphite | Long-term inhalation of high levels of graphite coarse particulate may cause lung disease or a tracheal disease. |

## 12. Ecological information

Ecotoxic effects： No information is available.
Biodegradable ： No information is available.
Mobility in soil : No information is available.
Bioconcentration or biological accumulation:No information is available.
Other harmful effects:Don’ t abandon the battery into environment, may cause water or soil pollution.

## 13. Disposal considerations

Great Power encourages battery recycling. Our Li-polymer cells are recyclable through the Rechargeable Battery Recycling Corporation's (RBRC) ***Charge Up to Recycle! Program***. For information call 1-800-8-BATTERY or see their website at www.rbrc.org. Li-ion batteries must be handled in accordance with all applicable state and federal laws and regulations.

DO NOT INCINERATE or subject battery cells to temperatures in excess of 212° F. Such treatment can vaporize the liquid electrolyte causing cell rupture. Do not use in combination with fresh and used lithium batteries neither with other type of battery.

## 14. Transport information

The battery shall be passed the test items of the UNITED NATIONS “Recommendations on the Transport of Dangerous Goods,Manual of Tests and Criteria" section 38.3 and meet the requirements of UNITED NATIONS"Recommendations on the Transport of Dangerous Goods, model Regulations ".

**General packaging requirement**

1.The cells or batteries must be protected so as to prevent short circuits.
2.The cells or batteries or equipment must be packed in suitable strong outer packaging.
3.If batteries contained in equipment, equipment must be secured against movement within the outer packaging and be packed so as to prevent accidental activation.

The battery can be shipped by air in according to PACKING INSTRUCTION 965 Section lB, or PACKING INSTRUCTION 966~967 Section ll of the 2022 IATA Dangerous Goods regulations 64th Edition.

Air transportation, according to IATA-DGR 64th Edition (Effective 1 January-31December 2023)

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|---|---|
| UN Number | UN 3480/UN3481 |
| Proper Shipping Name | LITHIUM ION BATTERIES |
| Hazard Class | Class 9 |
| Packaging requirement | PACKING INSTRUCTION 965 of section IB/PACKING INSTRUCTION 966~967 of section II |

Sea transportation, according to IMO IMDG Code（Amdt. 40-20）

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|---|---|
| UN Number | UN 3480/UN3481 |
| Proper Shipping Name | LITHIUM ION BATTERIES |
| Hazard Class | Not restricted |
| Special provision | sp188 |
| Package instruction | Not-restricted goods |
| EmS No. | F-A, S-I |

## 15. Regulatory information

Dangerous Goods Regulation (DGR)
Recommendations on the Transport of Dangerous Goods Model Regulations International Maritime Dangerous Goods (IMDG)
Occupational Safety and Health Act (OSHA)

Toxic Substances Control Act (TSCA)
Code of Federal Regulations (CFR)
Technical Instructions for the Safe Transport of Dangerous Goods
California Proposition 65
Superfund Amendments and Reauthorization Act Title Ⅲ (302/311/312/313) (SARA) In accordance with all Federal, State and local laws.

## 16. Other information

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| **Make people:** | Professional post: R&D Engineer | Name(sign): Tingting Liao |
| **Make unit:** | Name: R&D Department | Phone: 0086-20-39196888 |
| | Address: R&D Dept., Panyu Plant., | |

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