鹏辉 GREAT POWER

# MATERIAL SAFETY DATA SHEET

No.: PH-MSDS-2017 Date : Jan/5th/2017

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

Identification of the product

Product name : **Cylindrical Li-ion Battery**

Chemical System: LiCoO2/C

Model: Cylindrical Type Cells ICR18650-2600mAh 3.7V 9.62Wh

Designated for RECHARGE? X Yes __ No

Manufacturer/supplier identification

Company : GREAT POWER BATTERY(ZHUHAI) CO., LTD.

Contact for information : XINQING 5th RD. , DOUMEN DISTTICT, ZHUHAI GD, PRC

Emergency telephone No. : Mobile:+86-13726243449 Email:Michael@greatpower.net

## 2. Composition/information on ingredients

| Ingredient | Percent | CAS Index No./EC No. | Molar mass | Molecular formula | Symbol |
|---|---|---|---|---|---|
| Lithium cobaltate | 31.6% | 12190-79-3 | | LiCoO2 | |
| Graphite | 17.1% | 7782-42-5 | | C | |
| Organic Electrolyte | 13.2% | 21324-40-3 | | | |
| Polypropylene | 2.8% | 9003-07-0 | | | |
| Copper | 6.5% | 7440-50-8 | | Cu | |
| Aluminum | 28.8% | 7429-90-5 | | Al | |

Weight of lithium per cell: 0g. There is no metallic lithium in the Cylindrical Li-ion battery.

## 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

| | |
|---|---|
| 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

Handle with care. Flammability hazard exists if the package is damaged. Before shipping, must to check out the package is damaged or not by inspection, if package damaged, must to be repacking. 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

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| Appearance | |
| Physical state: | Solid |
| Form: | Prismatic (Laminated) |
| 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：

| | |
|---|---|
| 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： N/A
Further ecological data：N/A

## 13. Disposal considerations

Great Power encourages battery recycling. Our polymer Li-ion batteries 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

International transport regulations： 1. U.S. hazardous materials regulations pursuant to 49 CFR 173.185(b),
2. 2017 IATA Dangerous Goods Regulations **58th** edition.
3. IMDG Code pursuant to Special Provision 188. 49 CFR 173.185(b)

UN-No.: 3480 or 3481

Each Great Power cell or battery complies with the current edition – **58th Edition of the 2017 IATA** regulation:
1) Section Ⅱ of Packing Instruction
**PI965~PI967** ,For li-ion cells or batteries, or packed with equipment, or contained in equipment.
2) UN manual of Tests and Criteria, Part III, sub-section 38.3 (withstanding a 1.2m drop test);
3) For cells with content of lithium is no more than 20Wh , for batteries with content of lithium is no more than 100Wh per battery. The watt-hour rating must be marked on outside of the battery case except those manufactured before January 1, 2009 which may be transported without this marking until December 31, 2010.

**If Great Power polymer Li-ion cells are used to construct battery packs, the assembler of that pack is responsible to ensure the battery has been tested in accordance with the requirements contained in the UN Manual of Tests and Criteria and shipped in accordance with applicable regulations.**

Batteries must be packaged and offered for transportation in a manner that prevents the dangerous evolution of heat (for example, by the effective insulation of exposed terminals) and protects against short circuits.

## 15. Regulatory information

N/A

## 16. Other information


**Make people**： Professional post：R&D Engineer Name(sign)：ROGER LAW
**Make unit**： Name：R&D Department Phone：86-756-3922111
Address：R&D Dept., Zhuhai Plant., Mobile:+86-13726243449


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