# Material Safety Data Sheet

For

Shenzhen Pow-Tech New Power Co.,Ltd.

Room 1102,Xinhua insurance Mansions,Mintian Road,Central District,Shenzhen,China

And for their product

Li-ion Polymer Battery

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|---|---|
| Model/type reference | 356799 |
| Nominal Voltage | 3.7V |
| Typical Capacity | 2400mAh (8.80Wh ) |
| Weight | 44.0g |
| Shape and Physical Dimension (mm) | T: 3.50±0.5mm<br>W: 67.0 ±0.5mm<br>L: 99.00±0.5mm |
| Version number | V1.0 |
| Revision date | N/A. |

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| Laboratory | **Shenzhen NTEK Testing Technology Co., Ltd.** |
| Address | Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P. R. China |

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| **Compiled by (name+ signature)** | Gary wu | Gary. Wu |
| **Approved by (+ signature)** | Kevin Zou | Kevin Zou |

## Section 1- Chemical Product and Company Identification

Product Identification: Li-ion Polymer Battery
Model: 356799
Manufacture's/ Supplier Name: Shenzhen Pow-Tech New Power Co.,Ltd.
Room 1102,Xinhua insurance Mansions,Mintian Road,Central District,Shenzhen,China
Telephone number of the supplier: +86-755-82721259
Emergency Telephone No. (24h): +86-755-82721259
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Preparation Date: 2014-05-15
This MSDS was prepared by Shenzhen NTEK Testing Technology Co., Ltd.
Item Number: NTEK- 2014DC0515005S
Referenced documents: ISO 11014:2009 Safety data sheet for chemical products

## Section 2 – Hazards Identification

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| Preparation hazards and classification | Not dangerous with normal use. Do not dismantle, open or shred Li-ion Polymer Battery the ingredients contained within or their ingredients products could be harmful. |
| Apperance, Color, and Odor | Solid object with no odor, no color. |
| Primary Route(s) of Exposure | These chemicals are contained in a sealed stainless steel enclosure. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by Inhalation, Ingestion, Eye contact and Skin contact |
| Potential Health Effects: | **ACUTE (short term): see** Section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.<br>**Inhalation:** 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.<br>**Ingestion:** 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.<br>**Skin:** 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.<br>**Eye:** 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.<br>**CHRONIC (long term):** see Section 11 for additional toxicological data |
| Medical Conditions | Not applicable |

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| Aggravated by Exposure | |
| Reported as carcinogen | Not applicable |

## Section 3 – Composition/Information on Ingredients

Li-ion Polymer Battery is a mixture.

| Hazardous Ingredients (Chemical Name) | Concentration or concentration ranges (%) | CAS Number |
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| Lithium Cobalt Oxides (Li $CoO_2$) | 20-30% | 12190-79-3 |
| Graphite powder (C) | 15-20% | 7782-42-5 |
| Polyvinylidene Fluoride PVDF(-[-$CH_2$-$CF_2$-]-$_n$) | 0.5-2% | 24937-79-9 |
| Copper Foil (Cu) | 5-10% | 7440-50-8 |
| Aluminum Foil(Al) | 5-10% | 7429-90-5 |
| Electrolyte ($LiPF_6$ $C_3H_4O_3$ $C_4H_6O_3$ $C_3H_{10}O_3$) | 10-15% | 21324-40-3 |
| Polyethylene $(C_2H_4)_n$ | 0.5-1% | 9002-88-4 |
| Nickel | 5-10% | 7440-02-0 |
| Iron (Fe) | 15-20% | 7439-89-6 |

Labeling according to EC directives.
No symbol and risk phrase are required.
Note:CAS number is Chemical Abstract Service Registry Number.
N/A=Not apply.

## Section 4 – First-aid Measures

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| **Inhalation** | If contents of an opened battery are inhaled, remove source of contamination or move victim to fresh air. Obtain medical advice. |
| **Skin contact** | If skin contact with contents of an open battery occurs, as quickly as possible remove contaminated clothing, shoes and leather goods. Immediately flush with lukewarm, gently flowing water for at least 30 minutes. If irritation or pain persists, seek medical attention. Completely decontaminate clothing, shoes and leather goods before reuse or discard. |
| **Eye contact** | If eye contact with contents of an open battery occurs, immediately flush the |

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| | contaminated eye(s) with lukewarm, gently flowing water for at least 30 minutes while holding the eyelids open. Neutral saline solution may be used as soon as it is available. If necessary, continue flushing during transport to emergency care facility. Take care not to rinse contaminated water into the unaffected eye or onto face. Quickly transport victim to an emergency care facility. |
| **Ingestion** | If ingestion of contents of an open battery occurs, never give anything by mouth if victim is rapidly losing consciousness, or is unconscious or convulsing. Have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink 60 to 240 mL (2-8 oz.) of water. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Have victim rinse mouth with water again. Quickly transport victim to an emergency care facility. |

## Section 5 – Fire-fighting Measures

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| Flammable Properties | In the event that this battery has been ruptured, the electrolyte solution contain within the battery would be flammable. Like any sealed container, battery cells may rupture when exposed to excessive heat; this could result in the release of flammable or corrosive materials. |

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| Suitable extinguishing Media | Use extinguishing media suitable for the materials that are burning. |
| Unsuitable extinguishing Media | Not available |
| Explosion Data | **Sensitivity to Mechanical Impact:** This may result in rupture in extreme cases<br>**Sensitivity to Static Discharge:** Not Applicable |
| Specific Hazards arising from the chemical | Fires involving Li-ion Polymer Battery an be controlled with water. When water is used, however, hydrogen gas may evolve. In a confined space, hydrogen gas can form an explosive mixture. In this situation, smothering agents are recommended to extinguish the fire |
| Protective Equipment and precautions for firefighters | As for any fire, evacuate the area and fight the fire from a safe distance. Wear a pressure-demand, self-contained breathing apparatus and full protective gear. Fight fire from a protected location or a safe distance. Use NIOSH/MSHA approved full-face self-contained breathing apparatus(SCBA) with full protective gear. |
| NFPA | Health: 0 Flammability: 0 Instability: 0 |

## Section 6 – Accidental Release Measures

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| Personal Precautions, protective equipment, and emergency procedures | Restrict access to area until completion of clean-up. Do not touch the spilled material. Wear adequate personal protective equipment as indicated in Section 8. |
| Environmental Precautions | Prevent material from contaminating soil and from entering sewers or waterways. |
| Methods and materials for Containment | Stop the leak if safe to do so. Contain the spilled liquid with dry sand or earth. Clean up spills immediately. |
| Methods and materials for cleaning up | 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. |

## Section 7 – Handling and Storage

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| Handling | Don't handling Li-ion Polymer Battery with metalwork. Do not open, dissemble, crush or burn battery. Ensure good ventilation/ exhaustion at the workplace.<br>Prevent formation of dust.<br>Information about protection against explosions and fires: Keep ignition sources away- Do not smoke. |
| Storage | If the Li-ion Polymer Battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Li-ion Polymer Battery periodically.<br>3 months: -10℃~+40℃, 45 to 85%RH<br>And recommended at 0℃~+35℃ for long period storage.<br>The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more.<br>The voltage for a long time storage shall be 3.7V~4.2V range.<br>Do not storage Li-ion Polymer Battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by |

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| | other metal objects.<br>Keep out of reach of children.<br>Do not expose Li-ion Polymer Battery to heat or fire. Avoid storage in direct sunlight.<br>Do not store together with oxidizing and acidic materials. |

## Section 8 – Exposure Controls and Personal Protection

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| Engineering Controls | Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor.<br>Keep away from heat and open flame. Store in a cool, dry place. |
| Personal Protective Equipment | **Respiratory Protection:** Not necessary under normal conditions.<br>**Skin and body Protection:** Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery.<br>**Hand protection:** Wear neoprene or natural rubber material gloves if handling an open or leaking battery.<br>**Eye Protection:** Not necessary under normal conditions, Wear safety glasses if handling an open or leaking battery. |
| Other Protective Equipment | Have a safety shower and eye wash fountain readily available in the immediate work area. |
| Hygiene Measures | Do not eat, drink, or smoke in work area.<br>Maintain good housekeeping. |

## Section 9 - Physical and Chemical Properties

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| Physical State | Form: Solid | |
| | Color: Slivery | |
| | Odour: Monotony | |
| Change in condition: | | |
| pH, with indication of the concentration | | Not applicable |

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| Melting point/freezing point | Not available. |
| Boiling Point, initial boiling point and Boiling range: | Not available. |
| Flash Point | Not available. |
| Upper/lower flammability or explosive limits | Not available. |
| Vapor Pressure: | Not applicable |
| Vapor Density: (Air = 1) | Not applicable |
| Density/relative density | Not available. |
| Solubility in Water: | Insoluble |
| n-octanol/water partition coefficient | Not available. |
| Auto-ignition temperature | 130°C |
| Decomposition temperature | Not available. |
| Odout threshold | Not available. |
| Evaporation rate | Not available. |
| Flammability (soil, gas) | Not available. |
| Viscosity | Not applicable |

## Section 10 - Stability and Reactivity

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| Stability | The product is stable under normal conditions. |
| Conditions to Avoid (e.g. static discharge, shock or vibration) | Do not subject Li-ion Polymer Battery to mechanical shock.<br>Vibration encountered during transportation does not cause leakage, fire or explosion.<br>Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse. |
| Incompatible Materials | Not Available |
| Hazardous Decomposition Products | This material may release toxic fumes if burned or exposed to fire |
| Possibility of Hazardous Reaction | Not Available |

## Section 11 - Toxicological Information

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| Irritation | Risk of irritation occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this |

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| | occurs, irritation to the skin, eyes and respiratory tract may occur. |
| Sensitization | Not Available |
| Neurological Effects | Not Available |
| Teratoaenicitv | Not Available |
| Reproductive Toxicity | Not Available |
| Mutagenicity (Genetic Effects) | Not Available |
| Toxicologically Synergistic Materials | Not Available |

## Section 12 - Ecological Information

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| General note: | Water hazard class 1(Self-assessment): slightly hazardous for water.<br>Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. |
| Anticipated behavior of a chemical product in environment/possible environmental impace/ecotoxicity | Not Available |
| Mobility in soil | Not Available |

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| Persistence and Degradability | Not Available |
| Bioaccumulation potential | Not Available |
| Other Adverse Effects | Not Available |

## Section 13 – Disposal Considerations

Product disposal recommendation: Observe local, state and federal laws and regulations.
Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don’t disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

## Section 14 – Transport Information

The Li-ion Polymer Battery (356799) had passed the test UN 38.3 and is classified as

non-dangerous goods; Concorde's Li-ion Polymer Battery complies 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 Li-ion Polymer Battery.

The Li-ion Polymer Battery according to NEW PACKING INSTRUCTION 965~967 Section Ⅱ of IATA DGR 55th edition for transportation.

More information concerning shipping, testing, marking and packaging can be obtained from label master at http://www.labelmaster.com/.

Each package must be labeled with a Lithium Battery handling label.

Lithium-ion batteries can be treated as "Non-dangerous goods" under the United Nations Recommendations on the Transport of Dangerous Goods, Special Provision 188, provided that packaging is strong and prevent the products from short-circuit.

With regard to transport, the following regulations are cited and considered:

- The International Civil Aviation Organization(ICAO) Technical Instructions.
- The International Air transport Association (IATA) Dangerous Goods Regulations.
- The International Maritime Dangerous Goods (IMDG) Code.
- The US Hazardous Materials Regulation (HMR) pursuant to a final rule issued by RSPA
- The Office of Hazardous Materials Safety within the US Department of Transportations' (DOT) Research and Special Programs Administration (RSPA)

## Section 15 - Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

_____ Hazardous ____V___ Non-hazardous

## Section 16 - Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, Concorde makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

The data/information contained herein has been reviewed and approved for general release on the basis that this document contains no export controlled information.

********** End of MSDS **********