



## Shenzhen Toby Technology Co., Ltd.

1A/F., Bldg.6, Yusheng Industrial Zone, The National Road No.107 Xixiang  
Section 467, Xixiang, Bao'an, Shenzhen, Guangdong, China

Tel: (86) 755-26509301/02 Fax: (86) 755-26509195 Http: //www.tongbiao.com

# MATERIAL SAFETY DATA SHEETS

### Section 1 -SAMPLE INFORMATION:

1. **Sample Description:** Ni-MH rechargeable battery
2. **Sample Model:** Ni-CD AAA AA SC C D
3. **Brand Name:** ----
4. **Manufacturer:** HUIZHOU WALLYKING BATTERY CO., LTD.
5. **Manufacturer Address:** No.9 District Of Zhongkai, High-tech Industrial Development Zones, Huizhou, Guangdong, China

### CLIENT INFORMATION

1. **Applicant:** HUIZHOU WALLYKING BATTERY CO., LTD.
2. **Applicant Address:** No.9 District Of Zhongkai, High-tech Industrial Development Zones, Huizhou, Guangdong, China
3. **Applicant Post Code:** -----

### TEST INFORMATION:

1. **Applicant No:** ----
2. **Test Items and Request:** MATERIAL SAFETY DATA SHEETS
3. **Date of Receipt:** Dec. 09, 2013
4. **Date of Test:** Dec. 09-20, 2013

### REMARKS:

1. The test report is valid for above tested sample only and shall not be reproduced in part without written approval of the laboratory.
2. **Sample State:** Solid
3. **Sample Package:** Intact
4. **Ambient Condition During Testing:** 20 °C, 45% RH.
5. All above series are suitable for capacity from 20mAh to 10000mAh models.

Signed for Shenzhen TOBY

Justin Zhang  
Manager



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## MATERIAL SAFETY DATA SHEETS

### Section 1 - Identification of the substance /preparation and of the company/undertaking

Identification of the preparation: Lithium manganese cylindrical batteries

Company Identification: HUIZHOU WALLYKING BATTERY CO., LTD.

Company Address: No.9 District Of Zhongkai, High-tech Industrial Development Zones, Huizhou, Guangdong, China

FAX: 0086-752-2376773

Off-hour Emergency Phone Number: 0086-752-2388818

Mail: wallyking@126.com

### Section 2 - Composition/ Information on Ingredients

Substance/Preparation : Preparation

Component/Substance	Percentage by weight	CAS#
LiCoo2	35% - 38%	12190-79-3
Carbon	18% - 20%	7440-44-0
PVDF	1% - 2%	24937-79-9
Copper	8%-9%	7440-50-8
Aluminum	3. 5%-4%	7429-90-5
electrolyte (ImoLLiPF6)	17. 2%-18%	623-53-0
PP-AL-NL	5%-6%	---
PP-PE	1. 5%-2. 5%	9003-07-0/9002-88-4

### Section 3 - Hazards Identification

Danger sort	Not dangerous with normal use.
Routes of entry	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.
Health harm	Exposure to leaking electrolyte from ruptured or leaking battery can cause: 1. <b>Inhalation</b> — Burns and irritation of the respiratory system, coughing, wheezing, and shortness of breath.

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	<p>2. <b>Eyes</b> — Redness, tearing, burns. The electrolyte is corrosive to all ocular tissues.</p> <p>3. <b>Skin</b> — The electrolyte is corrosive and causes skin irritation and burns.</p> <p>4. <b>Ingestion</b> — The electrolyte solution causes tissue damage to throat and gastrointestinal track.</p>
<b>Environment harm</b>	Not necessary under conditions of normal use.
<b>Explosion danger</b>	The battery may be explosive at high temperature (above 130°C) or exposing to the fire.

### Section 4 - First Aid Measures

<b>Skin contact</b>	Not anticipated. If the battery is leaking and the contained material contacts the skin, flush with copious amounts of clear water for at least 15 minutes.
<b>Eye contact</b>	Not anticipated. If the battery is leaking and the contained material contacts eyes, flush with copious amounts of clear water for at least 15 minutes. Get medical attention at once.
<b>Inhalation</b>	Not anticipated. If the battery is leaking, remove to fresh air. If irritation persists, consult a physician.
<b>Ingestion</b>	Not anticipated. If the battery is leaking and the contained material is ingested, rinse mouth and surrounding area with clear water at once. Consult a physician immediately for treatment.

### Section 5 - Fire-Fighting Measures

<b>Unusual Fire and Explosion Hazards</b>	Battery may explode or leak potentially hazardous vapors subject to: exposed to excessive heat (above the maximum rated temperature as specified by the manufacturer) or fire, over-charged, punctured and crushed.
<b>Hazardous Combustion Products</b>	Fire, excessive heat, or over voltage conditions may produce hazardous decomposition products. Damaged batteries can result in rapid heating and the release of flammable vapors.
<b>Extinguishing Media</b>	Dry chemical type extinguishers are the most effective means to extinguish a battery fire. A CO2 extinguisher will also work effectively.
<b>Fire Fighting Procedures</b>	Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the



# MATERIAL SAFETY DATA SHEETS

	fire.
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## Section 6 - Accidental Release Measures

1. 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.
2. Environmental Precautions: Prevent material from contaminating soil and from entering sewers or waterways.
3. 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.
4. 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. 5. Collect all contaminated absorbent and dispose of according to directions in Section 6. Scrub the area with detergent and water; collect all contaminated wash water for proper disposal.

## Section 7 - Handling and Storage

<b>Handling</b>	<ol style="list-style-type: none"> <li>1. Batteries are designed to be recharged. However, improperly charging a battery may cause the battery to flame. When charging the battery, use dedicated chargers and follow the specified conditions.</li> <li>2. Never disassemble or modify a battery.</li> <li>3. Do not immerse, throw, and wet a battery in water.</li> <li>4. Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid the inhalation of any vapors that may be emitted.</li> <li>5. Short circuit causes heating. In addition, short circuit reduces the life of the battery and can lead to ignition of surrounding materials. Physical contact with to short-circuited battery can cause skin burn.</li> <li>6. Avoid reversing the battery polarity, which can cause the battery to be damaged or flame.</li> <li>7. In the event of skin or eye exposure to the electrolyte, refer to Section 4, First Aid Measures.</li> </ol>
<b>Storage</b>	If the Lithium manganese cylindrical batteries are subject to storage for such a long term as more than 3 months, it is recommended to recharge the Polymer Lithium-ion Battery



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	periodically. 3 months: -10°C~+40°C, 45 to 85%RH And recommended at 0°C~+35°C for long period storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.7V~4.2V range. Do not storage Lithium manganese cylindrical batteries haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. Keep out of reach of children. Do not expose Lithium manganese cylindrical batteries to heat or fire. Avoid storage in direct sunlight. Do not store together with oxidizing and acidic materials.
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### Section 8 - Exposure Controls/ Personal Protection

<b>Engineering Controls</b>	Keep away from heat and open flame.
<b>Ventilation</b>	Not necessary under conditions of normal use. In case of abuse, use adequate mechanical ventilation (local exhaust) for the battery that vent gas or fumes.
<b>Respiratory Protection</b>	Not necessary under conditions of normal use. If battery is burning, leave the area immediately. During fire fighting fireman should use self-contained breathing, full-face respiratory equipment. Fires may be fought but only from safe fire fighting distance, evacuate all persons from the area of fire immediately.
<b>Eye Protection</b>	Not necessary under conditions of normal use. Use safety glasses with side shields if handling a leaking or ruptured battery.
<b>Body Protection</b>	Not necessary under conditions of normal use. Use rubber apron and protective working in case of handling a leaking of ruptured battery.
<b>Protective Gloves</b>	Not necessary under conditions of normal use. Use chemical resistant rubber gloves if handling a leaking or ruptured battery.
<b>Others</b>	Use good chemical hygiene practice. Wash hands thoroughly after cleaning-up a battery spill caused by leaking battery. No eating, drinking, or smoking in battery storage area.

### Section 9 - Physical and Chemical Properties

<b>State</b>	Solid
<b>Odor</b>	Not Available
<b>pH</b>	Not Available

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Melting point/range	Not Available
Flash point	Not Available
Vapor pressure	Not Available
Vapor density	Not Available
Boiling point	Not Available
Solubility in water	Insoluble
Specific gravity	Not Available
Density	Not Available
Auto-ignition temperature	130° C

### Section 10 – Stability and Reactivity

Stability	Stable
Conditions to Avoid	Vibration encountered during transportation does not cause leakage, fire or explosion. Do not disassemble, crush, short or install with incorrect polarity. Avoid mechanical or electrical abuse.
Incompatibility	None during normal operation. Avoid exposure heat, open flame and corrosives.
Hazardous Polymerization	Not Available
Hazardous Decomposition Products	The battery may release irritative gas once the electrolyte leakage.

### Section 11 – Toxicological Information

The battery does not elicit toxicological properties during routine handling and use. If the battery is opened through misuse or damage, discard immediately. Internal components of cell are irritant and sensitization.

Irritation	The electrolytes contained in this battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.
Sensitization	Not Available
Neurological Effects	Not Available
Teratoaenicity	Not Available
Reproductive Toxicity	Not Available
Mutagenicity	Not Available



## MATERIAL SAFETY DATA SHEETS

(Genetic Effects)	
Toxicologically Synergistic Materials	Not Available

### Section 12 - Ecological Information

When properly used and disposed, the battery does not present environmental hazard.

Water hazard class 1(Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

### Section 13 - Disposal Considerations

#### Product disposal recommendation:

1. Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.
2. The battery should be completely discharged prior to disposal and/or the terminals taped or capped to prevent short circuit. When completely discharged, it is not considered hazardous.
3. The battery contains recyclable materials. Recycling options available in your local area should be considered regulations.

### Section 14 - Transport Information

Concorde's Lithium manganese cylindrical batteries comply 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 manganese cylindrical batteries. Batteries containing these cells should be transported as Class 9 hazardous material, except for those battery types declared to be exempt (contact Concorde for a current listing of exempt batteries) and/or the Lithium manganese cylindrical batteries have been tested under provisions of the UN Manual of Tests and Criteria, Part III, sub-section 38.3 and are classified as non-dangerous goods.

1. The Lithium manganese cylindrical batteries according to Section 2 of NEW PACKING INSTRUCTION 968-970 of IATA DGR 54<sup>th</sup> Edition for transportation.
2. Each package had labeled with a Lithium manganese cylindrical batteries handling label.
3. The following information is provided for domestic and international transport.



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Transport Fashion: By air, by sea, by railway, by road.

UN number: UN 3090

Shipping name: Ni-CD rechargeable battery

Packing group: II

Hazard classification: Class 9

Marine pollutant: No

ADR Class: Class 9

### Section 15 - Regulatory Information

<b>China:</b>	This MSDS in accordance with GB/T18287-2000 General specification of Lithium manganese cylindrical batteries for RC models.
<b>USA:</b>	This MSDS meets/exceeds OSHA requirements.
<b>International:</b>	This MSDS conforms to European Union (EU), the International Standards Organization (ISO) and the International Labour Organization (ILO)
<b>UL certification:</b>	The Future Power batteries are registered by Underwriters Laboratories, Northbrook, U.S.A. under file MH 46086.

### Section 16 - Other Information

Date: Dec. 20, 2013

Department: Quality department.

Data Audit Units: Shenzhen Toby Technology Co., Ltd.

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\*\*\*\*\* (END OF REPORT) \*\*\*\*\*