



Shenzhen HSO.Test Technology Co., Ltd.

No.: HSO160104004DRM

According to EU2001/58/EC

Date:Jan.04,2016

M S D S

MATERIAL SAFETY DATA SHEET

Section 1- PRODUCT AND COMPANY IDENTIFICATION

Dongguan Shanli Battery Technology CO.,LTD

3F, Building B, NO.178, Qiaojiao Middle Road, Shigu, Tangxia, Dongguan, Guangdong, China

-Item number : HSO160104004DRM

-Product code : Polymer Li-ion Battery

-Model No. : 401032、351120、351024、301321、401030、401230、551015、401032、350829、551124、401028、401225、402030、502030、602030、601624、452327、452530、323538、603048、551124.

-Nominal Voltage: : 3.7V

-Capacity : 55mAh (0.204Wh)

-Trade Name : N/A

-TEL : +86-0769-87285025

-Fax : +86-0769-85285586

-E-mail : 596320609@qq.com

The MSDS was prepared by Shenzhen HSO. Test Technology Co., Ltd.

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Section 2- Composition/Information on Ingredient

Information about the chemical nature of product:

MATERIAL OR INGREDIENT	PEL (OSHA)	TLV (ACGIH)	%/wt.
Lithium Cobalt Oxide (CAS# 12190-79-3)	0.1 mg/m ³ TWA (as Co)	0.02 mg/m ³ TWA (as Co)	30-35
Aluminum (CAS# 7429-90-5)	0.1 mg/m ³ TWA	0.02 mg/m ³ TWA	30-31
Copper (CAS# 7440-50-8)	0.1 mg/m ³ TWA	0.02 mg/m ³ TWA	4-7
Lithium Hexafluorophosphate (CAS# 21324-40-3)	None established	None established	0-5
Acetylene Black (CAS# 1333-86-4)	3.5 mg/m ³ TWA (as carbon black)	3.5 mg/m ³ TWA (as carbon black)	0-2
Diethyl Carbonate (CAS# 105-58-8)	None established	None established	0-5
Dimethyl Carbonate (CAS# 616-38-6)	None established	None established	0-5
Ethyl Methyl Carbonate (CAS# 623-53-0)	None established	None established	0-5
Propylene Carbonate (CAS# 108-32-7)	None established	None established	0-5
Propylene Carbonate (CAS# 108-32-7)	None established	None established	0-5
Electrolyte (proprietary)	None established	None established	12-16
Nickel (CAS# 7440-02-0)	None established	None established	0.7
Remaining inert materials	None established	None established	0.4

Further Information

For information purposes:

(*) Main ingredients: Lithium hexafluorophosphate, organic carbonates

Because of the cell structure the dangerous ingredients will not be available if used properly. During charge process a lithium graphite intercalation phase is formed.

Mercury content: Hg < 0.1mg/kg

Cadmium content: Cd < 1mg/kg

Lead content: Pb < 10mg/kg



Section 3- Hazards Identification

Fatalness: Basically non-toxic during normal use. Do not open battery. Avoid contact with internal components. And exposure to the ingredients contained or their ingredients products could be dangerous

Invasion route: Skin touch: There will be no dangerous during normal use. But touch with Sulfuric Acid: will cause severe irritation, burns and ulceration.

Eye touch: There will be no dangerous during normal use. But eye touch with Sulfuric Acid: will cause severe irritation, burns, cornea damage, and blindness. Lead Components: May cause eye irritation.

Inhalation: There will be no dangerous during normal use. But breathing of sulfuric acid vapors or mists may cause severe respiratory irritation. And Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs. And inhalation of Arsenic may cause toxic dangerous.

Ingestion: Ingestion of internal chemical materials Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach. Lead Compounds and Arsenic: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

Health hazards: For internal components, chemical materials are stored in a hermetically sealed shell, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger.

Environment hazards: Ingredients contained within or their ingredients products could be harmful to environment.

Burn & Burst danger: Highly flammable hydrogen gas is generated during charging and operation of batteries. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. Follow manufacturer's instructions for installation and service.



Section 4- First Aid Measures

The battery is not hazard with eye and skin contact under normal circumstance. In case of the enclosure is damaged, the battery can not be used and touched. It is safety except that the battery is damaged by fire or rupture. The leakage of internal hazardous substance and formation of hazardous substance would occur, take the following measures if contact with the battery.

Skin touch: If there is any unwell reaction, wash thoroughly with soap & water, flush with plenty of water. If irritation persists, seek medical advice.

Eyes touch: Rinse immediately with plenty of water for at least 15 mins. Contact a doctor if symptoms Persist

Inhalation: Remove from exposure site to fresh air. Keep at rest. If breathing is difficult, give oxygen. Obtain medical attention.

Ingestion: Give large quantities of water; do not induce vomiting. Seek medical advice immediately.

Section 5- Fire Fighting Measures

Danger characteristic: Highly flammable hydrogen gas is generated during charging and operation of batteries. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. Follow manufacturer's instructions for installation and service.

Extinguishing Media: CO₂; foam; dry chemical

Fire-Fighting: If batteries are on charge, shut off power. Use positive pressure, self-contained breathing apparatus. Water applied to electrolyte generates heat and causes it to spatter. Wear acid-resistant clothing.

Recommended: N/A

Special measures: N/A

Extinguishing procedures: N/A



Section 6- Accidental Release Measures

Personal precautions: If the battery is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area and allow the vapors to dissipate. Avoid to skin and eyes contact or inhalation of vapors. Remove spilled liquid with absorbent and incinerated. If leakage of the battery happens, liquid could be absorbed with sand, earth or other inert substance and contaminated area should be ventilated meantime.

Environment precautions: Make an limitation for burning and throwing into garbage. should be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

Cleaning up methods: N.A

Section 7- Handling and Storage

Precautions in handling: Do not expose the battery to excessive physical shocked or vibration. Short-circuiting should be avoided. Prolonged short circuits may damage the battery. Charge the battery according to manufacturer's specifications.

Storage conditions: Store batteries in cool, dry, well-ventilated areas with impervious surfaces and adequate containment in the event of spills. Batteries should also be stored under roof for protection against adverse weather conditions. Separate from incompatible materials. Store and handle only in areas with adequate water supply and spill control. Avoid damage to containers. Keep away from fire, sparks and heat.

Precautionary Labeling: POISON - CAUSES SEVERE BURNS DANGER - CONTAINS SULFURIC ACID.



Section 8- Exposure Controls, Personal Protection

Respiratory protection: No necessary under normal use. In case electrolyte leakage from the battery, protect hand with chemical resistant rubber gloves. If battery is burning, leave the area immediately. In abuse, use NIOSH approved acid gas filter mask or self-contained breathing apparatus.

Hand protection: None under normal use. In case of spilling, use Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

Eye protection: None required under normal conditions. Use approved chemical work safety goggles or face shield, if handling a leaking or rupture battery.

Skin protection: No necessary under normal use. Use rubber apron and protective working in case of handling of a rupture battery.

Other protective equipment: Chemical resistance clothing is recommended along with eye wash station and safety shower should be available. Work hygienic practices: Use good chemical hygiene practice. Wash hands after use and before drinking, eating or smoking. Wash hands thoroughly after cleaning-up component spill caused by leaking battery. No eating, drinking, or smoking in battery storage area. Launder contaminated cloth before reuse.

Section 9- Physical and Chemical Properties

Physical State: The sample is not single chemical material; there are no specific physical and chemical properties

Color: The sample is composed of several components, there is no specific color.

Odor: N.A

Boiling point: N.A

Melting point: N.A



Section 10- Stability and reactivity

Stability: Stable during normal operation conditions.

Conditions/materials to avoid: Avoid overcharging and smoking, or sparks near battery surface. High temperatures-cases decompose at >320°F.

Hazardous decomposition or byproducts: None under normal operating conditions. Carbon dioxide and hydrogen fluoride gas may be generated during combustion of battery.

Ventilation requirements: Well-ventilated area away from incompatible substances

Section 11- Toxicological information

Not applicable under normal conditions of use.

Toxicological information of contained chemicals, please see details in section 2.

Section 12- Ecological Information

In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates, and precipitates out of the water column.

Lead may occur as sorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water.

Most lead is strongly retained in soil, resulting in little mobility.

Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil.

Lead (dissolved phase) is bioaccumulated by plants and animals, both aquatic and terrestrial.



Section 13- Disposal Considerations

Nature of waste: Hazardous Waste

Waste disposal methods:

- a. 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.
- b. Incineration should never be performed by battery used. The batteries contained recyclable materials. Recycling options available in your local area should be considered when disposing of this product, through licensed waste carrier.
- c. The battery should have their terminal insulated in order to prevent short circuits during transportation to the disposal site.

Note: Consult your local or region authorities, disposal maybe subject to national, state, or local laws.

Section 14 – Transport Information

DOT regulations:



Hazards class: 9

Identification number: UN3481

Packing group: II

Proper shipping name(technical name): Battery (Polymer Li-ion Battery)

Label: 9



Land transport ADR/RID (cross-border):



ADR/RID class: 9 miscellaneous dangerous substances and articles

danger code(Kemler): 9

UN-Number: UN3481

Packing group: II

Label: 9

Description of goods: 3481 Battery (Polymer Li-ion Battery)

Maritime transport IMDG:



IMDG class: 9

UN Number: UN3481

Label: 9

Packing group: II

EMS Number: F-A, S-I

Marine pollutant: Yes

Proper shipping name: Battery (Polymer Li-ion Battery)

Air transport ICAO-TI and IATA DGR 57th edition, 2016:



UN/ID Number: 3481

Label: 9

Packing group: II

Proper shipping name: Battery (Polymer Li-ion Battery)

Packing instruction: PI965/ PI966/ PI967



There are some regulation about the international transport of lithium batteries:

the international Maritime Dangerous Goods (IMDG) Code by international Maritime Organization (IMO), Dangerous Goods Regulation(DGR) by International Air Transport Association(IATA) and Technical instruction for the Safe Transport of Dangerous Goods by Air(TI) by international Civil Aviation Organization(ICAO). These regulation are based on the UN Recommendations on the requirements of UN38.3(UN Manual of Test and Criteria, Part III, subsection 38.3) could be transported by air and by sea as ordinary goods, otherwise should be transported according to class 9, packing group II hazards goods.

Section 15- Regulatory information

Special requirement should be according to the local regulations

Section 16- Other Information

The above information is based on the data of which we are aware and is believed to be correct as of the data hereof. Since this information may be applied under conditions beyond our control and with which may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.

Prepared By Shenzhen HSO. Test Technology Co., Ltd.

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