Hangzhou Future Power Technology Co.,Ltd

MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Products Name	Polymer Lithium Ion Battery
Description	FT603048P3
Watt-hour Rate	3.88Wh
Manufacture Name	Hangzhou Future Power Technology CO., Ltd.
Address	No.16, Dongwang Road,Dongzhou Street, Fuyang , Hangzhou, Zhejiang, China 311400
Postcode	311400
Emergency Telephone No.	86-571-63371666
Technical Support Telephone No.	86-571-63370940
Fax	86-571-63371555
E-mail	battery@ftjt.net
MSDS Code	GPT-MSDS-1801-45
Date Prepared	January 18,2018

Section 2. Composition/Information on Ingredients

Chemical Name	Percent of Content	CAS No.	OSHA (PEL)	ACGIH (TLV)
Lithium Cobalt Dioxide ($LiCoO_2$)	25%~40%	12190-79-3	N/A	0.02mg/m^3 as Co
Graphite (C)	10%~30%	7782-42-5	15mg/m^3 (as dust)	3.5mg/m^3
Acetylene Black	1%~3%	1333-86-4	N/A	N/A
Electrolyte	5%~15%	623-53-0/2132 4-40-3	N/A	N/A
Copper	3~10%	7440-50-8	N/A	N/A
Nickel	1-3%	7440-02-0	N/A	N/A
Aluminum	8~15%	7429-90-5	N/A	N/A
Other	1~5%	---	N/A	N/A

ACGIH: American Council of Government Industrial Hygienists
TLV: Threshold Limit Value are personal exposure limits determined by the ACGIH

Section 3. Hazards Summarizing

Danger sort	N/A
Routes of entry	1. Eyes and Skin – When leaking, the electrolyte solution contained in the battery irritates to ocular tissues and the skin. 2. Inhalation — Respiratory (and eye) irritation may occur if fumes are released due heat or an abundance of leaking batteries. 3. Ingestion – The ingestion of the battery can be harmful. Content of open battery can cause serious chemical burns of mouth, esophagus and gastrointestinal tract.
Health harm	Exposure to leaking electrolyte from ruptured or leaking battery can cause: 1. Inhalation — Burns and irritation of the respiratory system, coughing, wheezing, and shortness of breath. 2. Eyes — Redness, tearing, burns. The electrolyte is corrosive to all ocular tissues. 3. Skin — The electrolyte is corrosive and causes skin irritation and burns. 4. Ingestion — The electrolyte solution causes tissue damage to throat and gastrointestinal track.
Environment harm	Not necessary under conditions of normal use
Explosion danger	The battery may be explosive at high temperature (above 60℃) or exposing to the fire.

Section 4. First Aid Measures

Skin contact	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.
Eye contact	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.
Inhalation	Not anticipated. If the battery is leaking, remove to fresh air. If irritation persists, consult a physician.
Ingestion	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.

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Section 5. Fire Fighting Measures

Unusual Fire and Explosion Hazards	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, short circuit, punctured and crushed.
Hazardous Combustion Products	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.
Extinguishing Media	Dry chemical type extinguishers are the most effective means to extinguish a battery fire. A CO_2 extinguisher will also work effectively.
Fire Fighting Procedures	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 fire.

Section 6. Accidental Release Measures

The material contained within the battery would only be released under abusive conditions. In the event of battery rupture and leakage, collect all the released materials that are not hot or burning in an appropriate waste disposal container while wearing proper protective clothing and ventilate the area. Placed in approved container and disposed according to the local regulations.

Section 7. Handling and Storage

Handling	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. 2. Never disassemble or modify a battery. 3. Do not immerse, throw, and wet a battery in water. Should a battery unintentionally be cru 4. shed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid the inhalation of any vapors that may be emitted. 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.

	6. Avoid reversing the battery polarity, which can cause the battery to be damaged or flame. 7. In the event of skin or eye exposure to the electrolyte, refer to Section 4, First Aid Measures.
Storage	1. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods. 2. Do not store batteries above 35℃ or below –20℃. Store batteries in a cool (about 20±5℃) in a long time, dry and ventilated area that is subject to little temperature change. Elevated temperatures can result in reduced battery cycle life. Battery exposure to temperatures in excess of 60℃ will result in the battery venting flammable liquid and gases. 3. Keep batteries in original package until use and do not jumble them.

Section 8. Exposure Controls/Personal Protection

Engineering Controls	Keep away from heat and open flame.
Ventilation	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.
Respiratory Protection	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.
Eye Protection	Not necessary under conditions of normal use. Use safety glasses with side shields if handling a leaking or ruptured battery.
Body Protection	Not necessary under conditions of normal use. Use rubber apron and protective working in case of handling a leaking of ruptured battery.

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Protective Gloves	Not necessary under conditions of normal use. Use chemical resistant rubber gloves if handling a leaking or ruptured battery.
Others	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

State	Solid
Odor	N/A
pH	N/A
Vapor pressure	N/A
Vapor density	N/A
Boiling point	N/A
Solubility in water	Insoluble
Specific gravity	N/A
Density	N/A

Section 10. Stability and Reactivity

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Stability	Stable
Conditions to Avoid	Do not heat, throw into fire, disassemble, short circuit, immerse in water or overcharge, etc.
Incompatibility	None during normal operation. Avoid exposure heat, open flame and corrosives.
Hazardous Polymerization	Will not occur
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.

Irritancy	The electrolytes contained in this battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.
Sensitization	No information is available.

Teratogenicity	No information is available.
Carcinogenicity	No information is available.
Mutagenicity	No information is available.
Reproductive toxicity	No information is available.

Section 12. Ecological Information

1. When properly used and disposed, the battery does not present environmental hazard.
2. The battery does not contain mercury, cadmium, or lead.
3. Do not let internal components enter marine environment. Avoid releasing to water ways, wastewater or ground water.

Section 13. Disposal Considerations

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 when disposing of this product, through licensed waste carrier.

Section 14. Transport Information

Proper Shipping Name: Polymer Lithium Ion Battery
UN Number: UN 3480+UN 3481
Air Shipment

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(A) For Lithium Ion Cells and Batteries (Packing Instruction 965)
Separate lithium ion batteries when shipping to prevent short-circuit. They should be packed in strong packaging for support during transport.
The products meet all the requirements of the IATA DGR 59th edition, under special provisions A99 including UN 38.3 test and 1.2 m drop test. They can be shipped as "Not Restricted" cargo in accordance with IATA Dangerous Good Regulations Packing Instruction 965 Section II item UN3480.
If the shipping quantity exceeds the quantity limit of Section II, they can be shipped according to IATA Dangerous Goods Regulations Packing Instruction 965 Section IB item UN3480.

(B) For Lithium Ion Cells and Batteries Packed with Equipment (Packing Instruction 966)

The products meet all the requirements of the IATA DGR 59th edition, under special provisions A164 including UN 38.3 test and 1.2 m drop test. They can be shipped as "Not Restricted" cargo in acc ordance with IATA Dangerous Goods Regulations Packing Instruction 966 Section II item UN3481. If the quantities of lithium ion cells or batteries exceed the allowance permitted in Section II of Packing Instruction 965, the goods can be shipped according to IATA Dangerous Goods Regulations Packing Instruction 966 Section 1B item UN3481

(C) For Lithium Ion Cells and Batteries Contained in Equipment (Packing Instruction 967)

The products meet all the requirements of the IATA DGR 59th edition, under special provisions A164 including UN 38.3 test and 1.2 m drop test. They can be shipped as "Not Restricted" cargo in accordance with IATA Dangerous Goods Regulations Packing Instruction 967 Section II item UN3481.

Sea Shipment

The good is not restricted to IMDG CODE according to the Special Provision 188 of IMDG CODE. Packaging complies with the Special Provision 188 of IMDG CODE.

Section 15. Regulatory Information

China: This MSDS in accordance with GB/T18287-2000 General specification of lithium-ion battery for cellular phone.
USA: This MSDS meets/exceeds OSHA requirements.
International: This MSDS conforms to European Union (EU), the International Standards Organization (ISO) and the International Labour Organization (ILO)
UL certification: The Future Power batteries are registered by Underwriters Laboratories, Northbrook, U.S.A. under file MH 30047.
PS. 1.When large amount of batteries are transported by ship, vehicle and railroad, avoid high temperature and dew condensation.

PS. 2. Avoid transportation which may cause damage of package.

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Section 16. Other Information

Hangzhou Future Power Technology Co.,Ltd

MATERIAL SAFETY DATA SHEET

Prepared Department: Tech Dept. Hangzhou Future Power Technology Co., Ltd.

Reviewed Department: Quality Dept. Hangzhou Future Power Technology Co., Ltd.

PS. 1. UN Manual of Tests and Criteria, Part III, sub-section 38.3 is met.

PS. 2. The latest IATA requirement is met.

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