.

MATERIAL SAFETY DATA SHEET

NO:YF-MSDS-21-001

Section 1. Chemical Product and Company Identification

Products Name	Lithium ion rechargeable battery
Sample Model	E097-27-1P1S18650
Rated voltage/capacity	3.6V/3200mAh/11.52Wh
Manufacture Name	DONGGUAN ANYFINE ELECTRONIC TECHNOLOGY CO.,LTD
Address	Building 1, No. 518 Xiangmang West Road, Qingxi Town, Dongguan City, Guangdong Province
Postcode	523658
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MSDS Code	YF-MSDS010
Date Prepared	2024.09.05

Section 2. Composition/Information on Ingredients

Chemical Name	Percent of Content	CAS No.	OSHA (PEL)	ACGIH (TLV)
Lithium Cobalt Dioxide ($LiCoO_2$)	≤35%	12190-79-3	N/A	0.02mg/m^3 as Co
Graphite (C)	25%~30%	7782-42-5	15mg/m^3 (as dust)	3.5mg/m^3
Poly Vnylidene Fluoride (PVDF)	＜20%	24937-79-9	N/A	N/A
Acetylene Black	0.5%~3%	1333-86-4	N/A	N/A
Electrolyte	5%~15%	623-53-0/21324-40-3	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.
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. 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. 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.
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

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

This report applies to by sea, by air air and by land;
The lid-ion battery tested according to the requirements of the 6th revised edition of the UN manual of tests and crieria, part Ⅲ, subsection 38.3;
Lithium ion battery was protected so as to prevent short circuits. This includes protection against contact with conductive materials within the same packaging that could lead to short circuit;
The LITHIUM ION BATTERY according to section Ⅱ/IA/IB of PACKING INSTRUCTION 965/966/967 of the 2024IATA Dangerous Goods regulations 65th edition may be transported and applicable U.S.DOT regulations for the safe transport of lid-ion battery.
More information concerning shipping, testing, marking and packaging can be obtained from label master at http://www.labelmaster.com/.

The packaging shall be adequate to avoid mechanical damage during transport, handling and stacking. The materials and pack design shall be chosen so as to prevent the development of unintentional electrical conduction, corrosion of the terminals and ingress of moisture.

The package must be handled with care and that a flammability hazard exists if the package is damaged; each package must be labeled with a lid-ion battery handling label of in addition to the Class 9 hazard label. 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. UN Number of Lithium Battery: UN3480 or UN3481;
UN proper shipping name/description (technical name): lithium ion batteries or lithium ion batteries contained in equipment or lithium ion batteries packed with equipment;
UN classification (Transport hazard class): Non dangerous;
Marine pollutant (Y/N): N;
The battery is not restricted according to IMO IMDG Code (inc. Amendment 40-20) Special Provision188.
For lithium-ion batteries by sea, provided that packaging is strong and prevent the products from short-circuit. UN number of lithium battery: UN3480 of UN3481;
UN proper shipping name/Description (Technical name): lithium ion batteries or lithium ion batteries contained in equipment or lithium ion batteries packed with equipment;
UN Classification (transport hazard class): Non dangerous; Marine pollutant (Y/N): Y;
Special provision: international maritime dangerous goods code (IMDG) 188,230,310,348,957;
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 Transportation' (DOT) Research and Special Programs Administration (RSPA)

Section 15. Regulatory Information

US DOT:
Effective December 29, 2004, the DOT requires that the outside of each package the

contains primary lithium batteries, regardless of size of number of batteries, batteries, be labeled with the following statement:” PRIMARY LITHIUM BATTERIES-FOBIDDEN FOR TRANSPORT ABOARD PASSENGER AIRCRAFT”, The labeling requirement covers shipments via highway, rail vessel or cargo-only aircraft and covers all shipment inside, into or out of the US. The label must be in contrasting color and the letters must be 12mm (0.5 in) in height for packages weighing more than 30Kg and 6mm (0.25 in) in height for packages weighting less than 30Kg.

Section 16. Other Information

Prepared Department: Tech Dept. DONGGUAN ANYFINE ELECTRONIC TECHNOLOGY CO.,LTD

Reviewed Department: Quality Dept. DONGGUAN ANYFINE ELECTRONIC TECHNOLOGY CO.,LTD