

MSDS

MATERIAL SAFETY DATA SHEET

Section 1. Chemical Product and Company Identification

Products Name: Lithium Iron Phosphate Battery

Model Number: V-LFP4820-L10

Rating: Nominal Voltage: 48V

Rated Capacity: 20Ah 960Wh

Weight: 14.235kg

Manufacture Name: JMHING (HK) Electronic Technology Company
LTD(Representative)

Address: C301 New Generation Information Technology Industrial Park Chuang Ye
2nd Road Bao An Guang Dong China

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E-mail: Jason@jmhing.com

Section 2. Composition/Information on Ingredients

Chemical Name	Percent of Content	CAS No.
Lithium iron phosphate (LiFePO ₄)	25%~30%	12057-17-9
Graphite (C)	8%~12%	7782-42-5
LiFP ₆	15%~22%	--
Aluminum(AL)	5%~8%	7429-90-5
Copper(Cu)	10%~15%	7440-50-8
High molecular polymer	3%~5%	--
Nickel (Ni)	0.5%~1%	7440-02-0
Iron (Fe)	22%~30%	7439-89-6

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Shenzhen Anbotek Compliance Laboratory Limited

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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 150°C) 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 CO₂ 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.

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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°C or below -20°C. Store batteries in a cool (about 20±5°C) 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°C 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

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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.

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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: The steel shell of lithium iron phosphate battery

This report applies to by sea, by air and by land;

The steel shell of lithium iron phosphate battery (model:V-LFP4820-L10) tested according to the requirements of the UN manual of tests and Criteria, Part III, subsection 38.3 and the result was passed.

Packing Group:

The Watt-hour rating is more than 20Wh/cell and 100Wh/battery pack can not be treated as “Non-dangerous goods” by the United Nations Recommendations on the Transport of Dangerous Goods/Special Provision 188, products are prevented from being short-circuited each other and are packaged in an appropriate condition which satisfies packing Group IA performance level.

The Lithium Iron Phosphate Battery according to Section IA of PACKING INSTRUCTION 965, or Section IA of PACKING INSTRUCTION 966~967 of the 2015 IATA Dangerous Goods regulations 56th Edition may be transported and applicable U.S. DOT regulations for the safe transport of Lithium Iron Phosphate Battery.

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

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;

- The International Maritime Dangerous Goods (IMDG) Code.

UN number of lithium battery: UN3480 or UN3481;

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Section 15. Regulatory Information

The transport of rechargeable lithium-ion batteries regulated by the united nations as detailed in the “model Regulations on the transport of dangerous Goods Ref. ST/SG/AC.10/1 Revision 18 2013”.

Defined by UN in the “Recommendations on the transport of Dangerous Goods Chapter 38.3 Manual of Tests and Criteria Ref. ST/SG/AC/ 10/11 Fifth revised edition 2011”. The Lithium-ion Cells and the battery Packs may or may not be assigned to the UN No. 3480 Class-9 that is restricted for transport.

Section 16. Other Information

Prepared Department: JMHING POWER LTD

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TEST REPORT

Report No.....: R0115111061B

Client.....: JMHING(HK) Electronic Technology Company LTD(Representative)

Address.....: C301 New Generation Information Technology Industrial Park
Chuang Ye 2nd Road Bao An Guang Dong China

Manufacturer.....: JMHING(HK) Electronic Technology Company LTD(Representative)

Address.....: C301 New Generation Information Technology Industrial Park
Chuang Ye 2nd Road Bao An Guang Dong China

Written by : Fannie Zhu

Approved by : Mark Zhu

Position : Authorized signatory

Date of Received Sample : 2015-11-13

Date(s) of Test : 2015-11-13 to 2015-11-16



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