



SAFETY DATA SHEET

Lithium Iron Phosphate (LiFePO4)

custommarineproducts.com

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1. Product Identification

Product Name: LiFePO4 Rechargeable Battery

Chemical System: LiFePO4

Brand: CMPower

2. Composition Information

Chemical Composition	Chemical Formula	CAS/CAS No.	Weight (%)
(LiFePO4)	LiFePO4	15365-14-7	38.09
Super-p	C	1333-86-4	0.62
PVDF	C12H14	9003-55-8	0.34
PVDF	[-CH2-CF2-]n	24937-79-9	1.04
Graphite	C	1333-86-4	20.10
Electrolyte	LiPF6	21324-40-3	1.10
Copper Foil	Cu	7440-50-8	9.22
Aluminum Foil	Al	7429-90-5	4.00
Lead	Pb	7439-92-1	Not Detected
Cadmium	Cd	7440-43-9	Not Detected
Mercury	Hg	7439-97-6	Not Detected

3. Hazards Identification

For the battery cell, chemical materials are stored in a hermetically sealed ABS plastic case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by miss-use, battery cell case will be breached and hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, hydrogen fluoride gas may be emitted.

Most important hazards and effects

Human health effects:

- Inhalation: The steam of the electrolyte has an anesthesia action and stimulates a respiratory tract.
- Skin contact: The steam of the electrolyte stimulates skin. The electrolyte skin contact causes a sore and stimulation on the skin.
- Eye contact: The steam of the electrolyte stimulates eyes.

Environmental effects:

Do not throw out it into the environment.

Risk assessment:

Explosive risk - None

Flammable risk - None

Oxidation risk - None

Toxic risk - None

Radioactive risk - None

Mordant risk - None

Other risk - Watt hour rate 1000-4000 Wh of LiFePO₄ battery

4. First Aid Measures

Spilled internal cell materials Inhalation: Make the victim blow his/her nose, gargle. Seek medical attention if necessary.

Skin contact: Remove contaminated clothes and shoes immediately. Wash extraneous matter or contact region with soap and plenty of water immediately.

Eye contact: Do not rub in eyes. Immediately flush eyes with water continuously for at least 15 minutes. Seek medical attention immediately.

Ingestion: Make the victim vomit. Seek medical attention.

5. Fire-fighting Measures

Suitable extinguishing media: Plenty of water, carbon dioxide gas, nitrogen gas, chemical powder fire extinguishing medium and fire foam.

Specific hazards: Corrosive gas may be emitted during fire.

Specific methods of fire-fighting: When the battery burns with other combustibles, use the fire extinguishing method which corresponds to the combustible items. Extinguish a fire from an up- wind position as much as possible to avoid inhalation.

Special protective equipment for firefighters:

Respiratory protection: Respiratory equipment or, if not available, dust mask.

Hand protection:

Protective gloves.

Eye protection: Goggles or protective glasses designed to protect against liquid splashes.

Skin and body protection: Protective clothing.

6. Accidental Release Measures

Spilled internal cell material, including leaked material from a battery cell, is to be dealt with carefully.

Precautions for human body: Remove spilled materials with protective equipment (protective glasses and protective gloves). Do not inhale the gas as much as possible. Moreover, avoid touching as much as possible.

Environmental precautions: Do not throw out into the environment.

Method of cleaning up: The spilled solids are put into a container. The leaked materials should be wiped off with dry cloth.

Prevention of secondary hazards: Avoid re-scattering. Do not bring the collected materials close to fire.

7. Handling and Storage

Handling:

The battery should not be opened, destroyed or incinerated, since it may leak or rupture and release to the environment the ingredients that are contained in the hermetically sealed container.

Specific safe handling advice:

- Never throw out cells in a fire or expose to high temperatures.
- Do not soak cells in water or seawater.
- Do not expose to strong oxidizers.
- Do not give a strong mechanical shock or fling.
- Never disassemble, modify or deform.

- Do not connect the positive terminal to the negative terminal with electrically conductive material.
- In the case of charging, use only dedicated charger and charge according to the conditions specified by the user manual.

Storage:

Storage conditions: Avoid direct sunlight, high temperature, and high humidity. Store in cool, dry place (temperature: 20 - 35°C, humidity: 45 - 85%).

Incompatible products: Conductive materials, water, seawater, strong oxidizers and strong acids.

Packing material: Insulating and tear-proof materials are recommended.

8. Exposure Controls / Personal Protection

Respiratory Protection - In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting cell cores. Respiratory Protection is not necessary under conditions of normal use.

Ventilation: Not necessary under conditions of normal use.

Protective Gloves: Not necessary under conditions of normal use.

Other Protective Clothing or Equipment: Not necessary under conditions of normal use.

9. Physical and Chemical Properties

Appearance: Quadrate shape

Ref, No.: RZUN2023-1455

Odor: If leaking, smells of medical ether.

pH: Not applicable as supplied.

Flash Point: Not applicable unless individual components exposed.

Flammability: Not applicable unless individual components exposed'

Relative density: Not applicable unless individual components exposed

Solubility (water): Not applicable unless individual components exposed

Solubility (other): Not applicable unless individual components exposed

10. Stability and Reactivity

Stability: Product is stable under conditions described in Section 7.

Conditions to Avoid : Heat above 70°C or incinerate. Deform. Mutilate. Crush. Disassemble.

Overcharge. Short circuit. Expose over a long period to humid conditions.

Materials to avoid: Oxidising agents, alkalis, water.

Hazardous Decomposition Products : Toxic Fumes, and may form peroxides.

Hazardous Polymerization : N/A.

If leaked, forbidden to contact with strong oxidizers, mineral acids, strong alkalies, halogenated hydrocarbons.

11. Toxicological Information

The content of the internal cell materials is as follows: Lithium Iron Phosphate (LiFePO₄)

Acute toxicity: No applicable data.

Sensitization: The nervous system of respiratory organs may become sensitive.

Chronic toxicity/Long term toxicity: No applicable data.

Skin causticity: Although it is very rare, a rash of the skin and allergic erythema may result.

Aluminum: Aluminum itself has no toxicity. When it goes into a wound, dermatitis may be caused.

Graphite Acute toxicity: Unknown. When it goes into the eyes, it stimulates the eyes; conjunctivitis, thickening of corneal epithelium or edematous inflammation palpebra may be caused.

Chronic toxicity/Long term toxicity: Since the long-term inhalation of high levels of graphite coarse particulate may become a cause of a lung disease or a tracheal disease.

Carcinogenicity: Graphite is not recognized as a cause of cancer by research organizations and natural toxic substance research organizations of cancer.

Copper Acute toxicity: 60-100mg sized coarse particulate causes a gastrointestinal disturbance with nausea and inflammation. Coarse particulate stimulates the nose and throat. Eyes will become red and painful if contact is made.

12. Ecological Information

Mammalian effects: None known at present.

Eco-toxicity: None known at present.

Bioaccumulation potential: Slowly Bio-degradable.

Ref, No.: GJW2023-1455 Page 7 of 10 Pages

Environmental fate: None known environmental hazards at present.

13. Disposal consideration

Do not incinerate, or subject cells to temperature in excess of 70°C, Such abuse can result in loss of seal leakage, and/or cell explosion. Dispose of in accordance with appropriate local regulations.

14. Transport information

Label for conveyance: Class 9 Hazard Label, Cargo Aircraft Only Label

UN Number: UN3480

Packaging Group: N/A

EmS No: F-A ,S-I

Marine pollutant: No

Proper Shipping name: Lithium ion batteries (Including lithium ion polymer batteries)

Hazard Classification: The goods shall be complied with the requirements of section IA of

Packing Instruction 965 of 61st DGR Manual of IATA.or Package complies with the Packing

Instruction 903 of IMDG CODE(Amdt. 37-14)2018Edition, including the passing of the UN38.3

test.

15. Regulation information

Legal information

《Dangerous Goods Regulations》

《Recommendations on the Transport of Dangerous Goods Model Regulations》

《International Maritime Dangerous Goods》

《Technical Instructions for the Safe Transport of Dangerous Goods》

《Classification and code of dangerous goods》

《Occupational Safety and Health Act》 (OSHA)

《Toxic Substance Control Act》 (TSCA)

《Consumer Product Safety Act》 (CPSA)

《Federal Environmental Pollution Control Act》 (FEPCA)

《The Oil Pollution Act》 (OPA)

《Superfund Amendments and Reauthorization Act TitleIII (302/311/312/313)》 (SARA)

《Resource Conservation and Recovery Act》 (RCRA)

《Safety Drinking Water Act》 (CWA)

《California Proposition 65》

《Code of Federal Regulations》 (CFR)

In accordance with all Federal, State and local laws.

16. Other information

The information contained in this Safety data sheet is based on the present state of knowledge and current legislation.

This safety data sheet provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications.