

Report No.: 1101283-080~1

MSDS Report

Samples LiFePO₄ Battery(14450 3.2V 250mAh)

Company Name OptimumNano Energy Co., Ltd

Address No. 68, Lanjing North Road, Ping Shan New district,
Shenzhen, China.

Date: 2014-11-21

MATERIAL SAFETY DATA SHEET

Section 1 - Chemical Product and Company Identification

Product Name	Lithium Iron Phosphate Battery(LiFePO4 Battery)
Battery Type	3.2V 250mAH
Nominal Voltage	3.2V
Nominal Capacity	250mAh
Chemical System	Lithium Iron Phosphate/Carbon
Designed for Recharge	YES
Packing Requirements	Packing Group II
UN Number	UN3480

Manufacturer: OptimumNano Energy Co., Ltd

Address: No. 68, Lanjing North Road, Ping Shan New district,
Shenzhen, China.

Post Code: 518118

Tel: +86-0755-89780511

Emergency Telephone: +86-0755-84630787

Fax: +86-0755-84630785

E-mail: optimum@optimum-china.com

Section 2 – Composition/Information on Ingredient

Lithium battery is a mixture.

Chemical composition	CAS No.	Concentration or concentration ranges (%)
Lithium Iron Phosphate	15365-14-7	30.8
Graphite powder	7782-42-5	17.2
Copper foil	7440-50-8	10.9
Aluminum foil	7429-90-5	7.1
Lithium hexafluorophosphate	21324-40-3	1.27
Dimethyl Carbonate	616-38-6	5.2
Iron	7439-89-6	26
Polyvinylidene fluoride	24937-79-9	0.73
Electrolyte	N/A	0.8

Section 3 - Hazards Identification

Class of division is 9, This product is safe under normal use.

Health Hazards (Acute and Chronic)

These chemicals are contained in a sealed enclosure. Risk of exposure occurs only if the battery is mechanically, thermally or electrically abused to the point of compromising the enclosure. Contact of electrolyte and extruded lithium with skin and eyes should be avoided.

Sign/Symptoms of Exposure

A shorted lithium battery can cause thermal and chemical burns upon contact with the skin.

Section 4 - First Aid Measures

Eye Contact

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

Skin Contact

Remove contaminated clothes and rinse skin with plenty of water or shower for 15 minutes. Get medical aid.

Inhalation

Remove from exposure and move to fresh air immediately. Use oxygen if available.

Ingestion

Give at least 2 glasses of milk or water. Induce vomiting unless patient is unconscious. Call a physician.

Section 5 - Fire Fighting Measures

Flash Point: N/A.

Auto-Ignition Temperature: N/A.

Extinguishing Media

Dry chemical, CO₂.

Special Fire-Fighting Procedures

Self-contained breathing apparatus.

Unusual Fire and Explosion Hazards

Cell may vent when subjected to excessive heat-exposing battery contents.

Hazardous Combustion Products

Carbon monoxide, carbon dioxide, lithium oxide fumes.

Section 6 - Accidental Release Measures

Steps to be Taken in case Material is Released or Spilled

If the battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. Wipe it up with a cloth, and dispose of it in a plastic bag and put into a steel can.

The preferred response is to leave the area and allow the batteries to cool and vapors to dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

Waste Disposal Method

It is recommended to discharge the battery to the end, handing in the abandoned batteries to related department unified, dispose of the batteries in accordance with approved local, state, and federal requirements. Consult state environmental protection agency and/or federal EPA.

Section 7 - Handling and Storage

The batteries should not be opened, destroyed or incinerate, since they may leak or rupture and release to the environment the ingredients that they contain in the hermetically sealed container. Do not short circuit terminals, or over charge the battery, forced over-discharge, throw to fire. Do not crush or puncture the battery, or immerse in liquids.

Precautions to be taken in handling and storing

Avoid mechanical or electrical abuse. Stored preferably in cool, dry and well-ventilated area, which is subject to little temperature change. Storage at high temperatures should be avoided.

Do not place the battery near heating equipment, nor expose to direct sunlight for long periods.

Other Precautions

Batteries may explode or cause burns, if disassembled, crushed or exposed to fire or high temperatures. Do not short or install with incorrect polarity.

Section 8 - Exposure Controls, Personal Protection

Respiratory Protection

In case of battery venting, provide as much ventilation as possible. Avoid confined areas with venting batteries. 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.

Personal Protection is recommended for venting batteries: Respiratory protection, protective gloves, protective clothing and safety glass with side shields.

Section 9 - Physical and Chemical Properties

Nominal Voltage: 3.2V

Nominal Capacity: 250mAh

Electric Energy: 0.8Wh.

Physical State: Solid

Appearance: Battery, Battery Pack

Section 10 - Stability and Reactivity

OptimumNano batteries are stable under normal usage.

Stability

Stable

Conditions to Avoid

Avoid exposing the batter to fire or high temperature. Do not disassemble, open, crush, puncture, incinerate, short circuit across the terminals or install with incorrect polarity. Avoid mechanical abuse and electrical abuse. The batteries are incompatible with water, moisture, oxidizing agents, reducing agents, acids and bases.

Hazardous Decomposition Products

This material may release toxic fumes if burned or exposed to fire.

Hazardous Polymerization

Will not occur.

If leaked, it is forbidden to contact with strong oxidizers, mineral acids, strong alkalis, halogenated hydrocarbons.

Section 11 - Toxicological Information

Inhalation, skin contact and eye contact are possible when the battery is opened.

Exposure to internal contents, the corrosive fumes will be very irritation to skin, eyes and mucous membranes. Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

Section 12 - Ecological Information

When promptly used or disposed the battery does not present environmental hazard.

When disposed, keep away from water, rain and snow.

Section 13 - Disposal Considerations

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OF PREPARATION

If batteries are still fully charged or only partially discharged, they can be considered a reactive hazardous waste because of significant amount of uncreated, or unconsumed lithium remaining in the spent battery. The batteries must be neutralized through an approved secondary treatment facility prior to disposal as a hazardous waste. Recycling of battery can be done in authorized facility, through licensed waste carrier.

Section 14 - Transport Information

Lithium battery complies with the UN Recommendations on the Transport of Dangerous Goods;

IATA Dangerous Goods regulations and applicable US DOT regulations for the safe transport of

Lithium battery Batteries containing these cells should be transported as Class 9 hazardous material except for those battery types declared to be exempt (contact Concorde for a current listing of exempt batteries) and/or the Lithium battery have been tested under provisions of the UN Manual of Tests and Criteria, Part III, sub-section 383 and are classified as non-dangerous goods.

The product is not classified as dangerous Goods according to the current edition of IATA Dangerous Goods Regulations And not regulated by IATA DGR, This product fully conforms to IATA Shipping PI 967, section II.

Do not damage or mishandle this package If package is damaged, batteries must be quarantined inspected, and repacked For emergency information, ca11:+86-755-84630688

The Lithium battery according to NEW PACKING INSTRUCTION 965-967 Of IATA DGR 55th Edition for transportation.

Each package had labeled with a Lithium battery handling label.

The following information is provided for domestic and international transport.

DOT regulations:		
UN Classification (Transport Hazardous) :	9	
UN number:	3480 Or 3481	
Packing group:	II	
UN Proper shipping name (technical name) :	LITHIUM BATTERIES	
Marine pollutant (Y/N)	Y	
Label	9	
Land transport ADR/RID (cross-border) :		

ADR/RID class:	9 Miscellaneous dangerous substances	
Danger code(Kemler):	9	
UN-Number:	3480 Or 3481	
Packaging group:	II	
Marine pollutant(Y/N):	N	
Label:	9	
Description of goods:	3480 Or 3481 Lithium batteries	
Sea transport IM DG :		
IMDG Class:	9	
UN Number:	3480 Or 3481	
Label:	9	
Packaging group:	II	
EMS Number:	F-A, S-I	
Marine pollutant(Y/N):	Y	
Special regulate:	IMO 188	
Proper shipping name:	Lithium batteries	
Air transport ICAO-TI and IATA-DGR:		
UN/ID Number:	3480 Or 3481	
Label:	9	
Packaging group:	II	
Marine pollutant(Y/N):	N	
Proper shipping name:	Lithium batteries	

Section 15 - Regulatory Information

Law Information

《Dangerous Goods Regulation》

《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 Substances Control Act》 (TSCA)

《Consumer Product Safety Act》 (CPSA)

《Federal Environmental Pollution Control Act》 (FEPCA)

《The Oil Pollution Act》 (OPA)

《Superfund Amendments and Reauthorization Act Title III (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.

Section 16 - Additional 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.