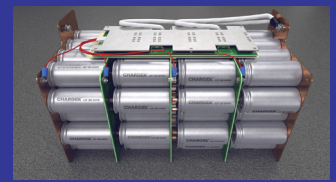
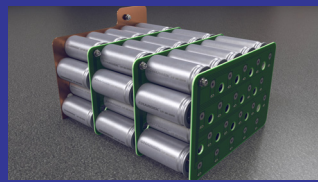
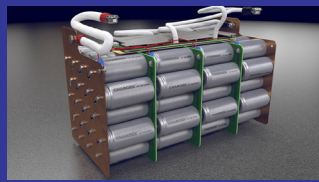
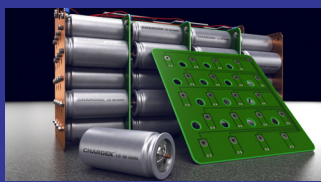


**MSDS REPORT**  
**LiFePO<sub>4</sub>**  
**BATTERY**



## Section - 1 Chemical Product

Product Name	Lithium Iron Phosphate Battery (LiFePO <sub>4</sub> Battery)
Battery Type	32700 LiFePO <sub>4</sub>
Nominal Voltage	3.2V
Nominal Capacity	6AH
Chemical System	Lithium Iron Phosphate/Carbon
Designed for Recharge	YES
Packing Requirements	Packing Group II
UN Number	UN3480

## Section - 2 Composition/Information on Ingredient

Chemical composition	Molecular formula	CAS No.	Weight (%)
Lithium Iron Phosphate	LiFePO <sub>4</sub>	15365-14-7	37.9
Graphite	C	7782-42-5	18.2
Copper	Cu	7440-50-8	10.9
Aluminum	Al	7429-90-5	7.0
Lithium Hexafluorophosphate	LiPF <sub>6</sub>	21324-40-3	3.1
Carbonate	CO <sub>3</sub> -2	497-19-8	19.4
Polypropylene	(C <sub>3</sub> H <sub>6</sub> ) <sub>n</sub>	9003-07-0	3.5

## Section - 3 Hazards Identifications

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.

### Signs/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, CO<sub>2</sub>

### 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 steel can.

## Waste Disposal Method

It is recommended to discharge the battery to the end, handing in the abandoned batteries to related department, 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 incinerated 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.

### Handling and storage precautions

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 glasses with side shields.

## Section - 9 Physical and Chemical Properties

Nominal Voltage: 3.2V

Nominal Capacity: 6.5AH

Electric Energy: 0.0208kW

Physical State: Solid

Appearance: Battery

## Section - 10 Stability and Reactivity

Optimum Nano batteries are stable under normal usage

### Stability

Stable

### Conditions to Avoid

Avoid exposing the battery to fire or high temperature. Do not disassemble, open, 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 irritable to the skin, eyes and mucous membranes.

Overexposure can cause symptoms of non-fibrotic lung injury and membrane irritation.

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## Section - 12

### Ecological Information

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

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

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## Section - 13

### Disposal Considerations

#### APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OF PREPARATION

If batteries are still fully charged or only partially, 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 an authorized facility, through a licensed waste carrier.

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## Section - 14

### Transportation Information

**IMDG Proper Shipping Name:** Lithium Ion Batteries

**Hazard Class:** Class 9- "Dangerous Goods" for international air and ocean shipments.

**UN No. :** UN3480

**Packaging Group:** II

Watt-hour exceeds the standards so it belongs to dangerous goods.

When transporting or moving the battery within your installation, please follow the guidelines below.

- Make sure that all cables and external connectors are disconnected and removed from the battery prior to moving.
- The packages should be in strong packaging for support during transportation. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles and wet by rain.
- Avoid throwing, rolling and excessive stacking during loading and transportation.

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## 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 Healthy 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)>

<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.

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## 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 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