Material Safety Data Sheet

UN GHS FORMAT COMPLIANT

Version 2.1.

Section 1 - product and company identification

Art. no.	Product name	Weight	Voltage	Energy Cap.
-	Module 2-22	7 kg	3.2 v	850 Wh
-	Module 4-44	7 kg	3.2 v	850 Wh
8721082427050	Lithium Battery 12V 1700Wh	19 kg	12.8 v	1700 Wh
8721082427043	Lithium Battery 12V 3400Wh	32 kg	12.8 v	3400 Wh
8721082427036	Lithium Battery 24V 3400Wh	32 kg	25.6 v	3400 Wh
8721082427029	Lithium Battery 24V 6800Wh	61 kg	25.6 v	6800 Wh
8721082427005	Lithium Battery 48V 6800Wh	61 kg	51.2 v	6800 Wh
8721082427012	Lithium Battery 48V 13600Wh	119 kg	51.2 v	13600 Wh

**Batteries contain BMS, modules do not contain BMS*

Product use: Energy storage, Battery packs.

Chemical family: Lithium iron phosphate

Chemical formula: $LiFePO_4$

Synonymes: LFP-battery, phosphate battery, LiFePO4 battery

Manufacturer:
IONBASE B.V.
Westzeedijk 5a
1398BB Muiden
The Netherlands

Email: info@ionbase.io
Phone number: 0619542789

Section 2 - Hazard Identification

Product classification

Composite batteries consisting of component cells are provided with a sturdy aluminum housing that provides adequate protection for the component cells under normal use and transport conditions. The hazardous components in the composite battery product are the cylindrical 32700 lithium iron phosphate cells. Under normal conditions, these cells pose no physical, fire or explosion hazard. Each battery cell is designed to discharge pressure build-up due to gas formation via a valve. The housing is equipped with a pressure relief valve to neutralize any under/over pressure in the housing.

Productdescription: Mixture

According to regulation (EC) no. 1272/2008 and its amendments.
• This mixture presents no physical hazard. Refer to recommendations regarding other products that are present in the container or surroundings.

• This mixture poses no health hazard beyond any occupational exposure limit values (see sections 3 and 8).

• This mixture poses no danger to the environment. No environmental damage is known or foreseeable under normal conditions of use.

Labels:

Overview of dangers and classification:
Not dangerous under normal use. The materials in the component cells only pose a risk when the structural whole of one or more component cell(s) is at stake. Do not expose the batteries to external heat sources such as fire. Do not connect or mix batteries of different battery types, sizes, voltages, or chemical formats. Do not short-circuit, overcharge, over-discharge, puncture, incinerate, crush, subject it to severe shock, subject it to severe vibration, or allow it to heat above or below the designated limit.
Damage to the battery cells can lead to explosion and/or fire hazard. Dangerous hydrogen fluoride gases can be released in case of fire. Exposure to the components in the cells of the battery or substances released from the battery during ignition can be harmful to human health and the environment.

Aspect, color and odor: Solid object, no odor.

Risk of exposure: Risk of exposure arises only if the battery component cell is mechanically, thermally or electrically damaged and the casing has defects. If this occurs, exposure to electrolyte solutions in the battery cell may occur through inhalation, contact with eyes, skin and ingestion.

Effects of exposure to hazardous substances in case of component cell damage or fire

• Skin contact: Steam or liquids from the cell electrolyte can be harmful in case of skin contact. Contact with the skin can cause severe irritation or (chemical) burns.

• Eye Contact: Steam or liquids from the cell electrolyte can be harmful in case of eye contact. Contact with the eyes can cause severe irritation or (chemical) burns.

• Inhalation: Inhaling steam or liquids from the cell electrolyte is harmful to the lungs and can cause severe irritation. Inhaling the harmful substance can cause serious breathing problems.

• Ingestion: Ingestion of substances from the battery component cells can cause severe irritation and chemical burns to the mouth, throat and esophagus.

Section 3 - composition / information about ingredients

EU: This product is an article according to the REACH Regulation (1907/2006).

Section 4 - First aid measures

In general, if in doubt or if symptoms persist, always call a doctor.NEVER allow anything to be swallowed by an unconscious person.

Description of first aid measures

In the event of breakage or opening of an accumulator, persons must be evacuated from the contaminated area and maximum ventilation provided to eliminate corrosive gases, smoke and unpleasant odours. If this type of incident occurs, you must respect the following instructions:

• In case of splashes or contact with eyes: Wash thoroughly with clean water for 15 minutes with eyelids open. If pain, redness or visual disturbances occur, consult an ophthalmologist.

• In case of splashes or contact with the skin : Pay attention to product residues that may be between the skin and clothing, watch, shoes.

• If swallowed : After swallowing small amounts (not more than one gulp), rinse mouth with water and seek medical advice.

To keep calm. Don't vomit. Consult a doctor and show him the label. In case of accidental ingestion, consult a doctor to decide on monitoring and subsequent hospital treatment, if necessary. Show the label.

Section 5 - Fire extinguishing

Applicable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the environment such as dry powder and CO2.

Non-applicable extinguishing media: No data available

Specific hazards arising from the chemical: When exposed to high temperatures, the casing may burst and release hazardous decomposition products. Lithium-ion batteries contain flammable electrolytes that can escape, catch fire and spark when exposed to high temperatures (>150 Celsius). If damaged or misused by, for example, mechanical damage or electrical overload, ignition may result.

Protective measures for firefighters: Wear protective equipment, self-contained breathing apparatus. Full protective impermeable suit.

Section 6 - Accidental release measures

Personal Precautions: Wear protective equipment. Keep unprotected persons away. Provide adequate ventilation.

Protective equipment: Wear a mask and eye protection.

Emergency procedures: Remove heat and ignition sources, evacuate area. Collect as much of the spilled material as possible, place in a suitable container for disposal. Keep spilled material away from sewers and surface waters.

Environmental Precautions: Do not release material into the environment. Follow local regulations for the disposal

of the material.

Section 7 - Handeling and storage

Precautions for safe Handling: Consumption of food and drink in work areas should be avoided. Wash hands with soap and water before eating or drinking. Ground containers when transferring liquids to prevent static electricity.

Batteries can explode or cause burns if disassembled, crushed, or exposed to high temperatures. Do not short circuit or install with wrong polarity.

Storage: Store safely in a cool, dry, well-ventilated place. Do not store near heat sources or in direct sunlight. Insulate the battery terminals to prevent short circuits.

Section 8 - Exposure controls/personal protection

Respiration protection: Not necessary under conditions of normal use. In case of battery venting or rupture, use a self-contained full-face respiratory mask.

Eye protection: Not necessary under conditions of normal use. In case of battery rupture or leakage, use safety goggles.

Skin/hand protection: Not necessary under conditions of normal use. In case of battery rupture or leakage, wear rubber apron and Viton rubber gloves.

Section 9 - physical and chemical properties

Physical State: Solid

Appeaance: Battery

pH: N.A.

Relative Density: N.A.

Boiling Point: N.A.

Metling Point: N.A.

Viscosity: N.A.

Oxidizing Properties: N.A.

Flash Point and Method (C): N.A.

Odor Type: Odorless

Odor Threshold: N.A.

Evaporative Rate: N.A.

Auto Ignition Temperature: N.A.

Flammability Limtits (%): N.A.

Vapor Pressure: N.A.

Vapor Density: N.A.

Solubility in water: Insoluble

Water/Oil distribution coefficient: N.A.

Section 10 - Stability and reactivity

Stability: Stable

Conditions to avoid: Avoid exposing battery to high temperatures. Do not incinerate, deform, mutilate, crush, pierce, short circuit or disassemble.

Materials to Avoid: Not Applicable

Hazardous Decomposition Products: Combustible vapors may be released if exposed to fire.

Possibility of Hazardous Reactions: Not available.

Section 11 - toxicological information

Irritation: Risk of irritation only occurs if battery cells are mechanically, thermally or electrically abused and the enclosure is compromised.

Neurological Effects: Not applicable.

Sensitization: Not applicable.

Teratogenicity: Not applicable.

Reproductive Toxicity: Not applicable.

Mutagenicity (Genetic Eects): Not applicable.

Toxicologically Synergistic Materials: Not available

Section 12 - Ecological information

Bioaccumulative potential: Not available.

Persistence and degradability: Not available.

Mobility: Not available.

Ecotoxicity: Not available.

Other adverse effects: Not available.

Section 13 - Disposal considerations

Waste Disposal Method: Recycling is encouraged . Dispose of in accordance with local, state and federal laws and regulations
EC: Dispose of in accordance with relevant EC Directives.

Section 14 - transport information

The used battery cells have been tested under provisions of the UN manual of tests and criteria, part III, subsection 38.3 (UN38.3).

Section 15 - regulatory information

Shipping by air:
IATA proper shipping name: Lithium Ion Batteries
Hazard Class: 9
UN Class: UN3480
Packaging group: II

Watt-hour exceeds the standard, so it belongs to dangerous goods. Cargo only. The goods need to be packaged according to the packing instructions 965 section I of DGR.

Shipping by sea:
IMDG proper shipping name: Lithium Ion Batteries
Hazard Class: 9
UN Class: UN3480
Packaging group: II

Watt-hour exceeds the standard, so it belongs to dangerous goods. Use Class 9 Miscellaneous Dangerous Goods and UN Identification labels for transportation of lithium ion batteries that are assigned Class 9.

Section 16 - Regulatory information

EC classification for the substance/preparation:
Symbol: This product is not classified as dangerous according to Directive 1999/45/EC and its amendments.

Risk Phrases: None.

Safety Phrases: S2: Keep out of the reach of children.

The information contained in this MSDS contains valuable information critical to the safe handling and proper use of the product.

This MSDS should be retained and available for employees and other users of this product. Please read this document thoroughly and in full since it contains important information for personal health and handling of the products. The document is only intended as guide to a person trained in chemical handling or a person supervised by a person trained in chemical handling. IONBASE is not able to adress all potential dangers of interraction of our products with other chemicals or materials. The user is always responsible for taking adequate precautions and the dangers of this product in his application. The information provided in this MSDS is provided in good faith and, to the best of our knowledge, the information provided in this MSDS document is correct. We do not assume any liability for consequences of the use of this information since it may be applied under conditions beyond our control or knowledge. Please visit ionbase.io for the latest verion of this MSDS document.