

SAFETY DATA SHEET*LI-ION (LiFePO₄) BATTERY*

Document No. SSB-SDS-02, Version 1.2

1. IDENTIFICATION

Product Name: Lithium Ion Phosphate Battery
Other Name: LiFePO₄ Battery
Use: Starting, lighting, power, ignition, Deep Cycle
UN Number: 3480 Dangerous Goods Class: 9

Physical Description/Properties

Appearance: Rectangular plastic casing with exposed terminals for electrical connections.

COMPANY DETAILS

Company: Super Start Batteries
Pty Ltd (A.C.N. 101
683 694)
Address: Unit 30 / 76 Hume Highway
LANSVALE NSW 2166
Telephone Number: (02) 9755 7851
Fax Number: (02) 9755 7852
Emergency Number: (02) 9755 7851

2. HAZARD INFORMATION**Classification According to GHS:**

Not a hazardous substance or mixture according to GHS.

GHS Label Elements, including precautionary statements:

Not a hazardous substance or mixture according to GHS.

Not applicable.

Under normal conditions of use, electrode materials and liquid electrolyte they contain are non-reactive provided the battery integrity is maintained and seals remain intact, Risk of exposure only in case of abuse, e.g. mechanical, thermal, electrical, which leads to the activation of safety valves and/or the rupture of the battery containers. Electrolyte leakage, electrode materials reaction with moisture/water of battery vent/explosion/fire may follow depending upon circumstances.

3. COMPOSITION / INGREDIENT INFORMATION

Substance	Chemical Symbol	Content (%)	Melting Point °C	Special Risk	Safety Advice	CAS No.
Lithium ion phosphate	LiFePO ₄	23~33	> 1000	R22, R43	S2, S22, S24, S26, S36, S37, S45	15365-14-7
Carbon	C	12~17	> 1000			7440-44-0
Organic Solvents	EC PC DEC	3	EC : 38°C PC : -49°C DEC : -43°C	R21, R22, R41, R42, R43	S2, S24, S26, S36, S37, S45	
	LiPF ₆		N/A	R14	S2, S8, S22, S24, S26, S36	21324-40-3

slight variations depending from alltype

4. FIRST AID MEASURES

In case of battery rupture, evacuate personnel from contaminated area and provide maximum ventilation to clear out fumes and pungent odours.

In all cases, seek immediate medical attention:

- Eye contact: Flush with plenty of water (eyelids-held open) for at least 15 minutes.
- Skin contact: Remove all contaminated clothing and flush affected areas with plenty of water and soap for at least 15 minutes.
- Ingestion: Dilute by giving plenty of water and get immediate medical attention. Assure that the victim does not aspirate vomited material by use of positional drainage. Assure that mucus does not obstruct the airway. Do not give anything by mouth to an unconscious person.
- Inhalation: Remove to fresh air and ventilate the contaminated area. Give oxygen or artificial respiration if needed.

5. FIRE FIGHTING MEASURES

Fire and explosion hazard:	The batteries can leak and/or spout vaporized or decomposed and combustible electrolyte fumes in case of exposure above 90°C resulting from inappropriate use or from the environment. Possible formation of hydrogen fluoride (HF) and phosphorous oxides during fire. LiPF ₆ salt contained in the electrolyte releases hydrogen fluoride (HF) in contact with water.
Extinguishing media:	Suitable : CO ₂ , Dry chemical or Foam extinguishers Not to be used : Type D extinguishers
Special exposure hazards:	Following cell overheating due to external source or due to improper use, electrolyte leakage or battery container rupture may occur and release inner component/material in the environment. Eye contact: The electrolyte solution contained in the battery is irritant to ocular tissues. Skin contact: The electrolyte solution contained in the battery causes skin irritation. Ingestion: The ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract. Inhalation: Contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and oedema.
Special protective equipment:	Use self-contained breathing apparatus to avoid breathing irritant fumes. Wear protective clothing and equipment to prevent body contact with electrolyte solution.

6. ACCIDENTAL RELEASE MEASURES

The material contained within the batteries would only be expelled under abusive conditions. Using shovel or broom, cover battery or spilled substances with dry sand or vermiculite, place in approved container (after cooling if necessary) and dispose in accordance with local regulations.

7. HANDLING AND STORAGE

The batteries should not be opened destroyed or incinerated since they may leak or rupture and release in the environment the ingredients they contain.

Handling	Do not crush, pierce, short (+) and (-) battery terminals with conductive (i.e. metal) material. Do not directly heat or solder. Do not throw into fire. Do not mix batteries of different types and brands. Do not mix new and used batteries. Keep batteries in non-conductive (i.e. plastic) trays.
Storage	Store in a cool (preferably below 30°C) and ventilated area away from moisture, sources of heat, open flames, food and drink. Keep adequate clearance between walls and batteries. Temperature above 90°C may result in battery leakage and rupture. Since short circuit can cause burn, leakage and rupture hazard, keep batteries in original packaging until use and do not jumble them.
Other	Manufacturer recommendations regarding maximum recommended currents and operating temperature range. Applying pressure or deforming the battery may lead to disassembly followed by eye, skin and throat irritation.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Respiratory protection:	Not necessary under normal use. In case of battery rupture, use self-contained full-face respiratory equipment. Equipment with type ABEK filter.
Hand protection:	Not necessary under normal use. Use rubber gloves if handling a leaking or ruptured battery.
Eye protection:	Not necessary under normal use. Wear safety goggles or glasses with side shields if handling a leaking or ruptured battery.
Skin protection:	Not necessary under normal use. Use rubber apron and protective working in case of handling of a ruptured battery.

9. PHYSICAL & CHEMICAL PROPERTIES

Cells are not single chemical material: there are no specific physical and chemical properties such as melting point and boiling point.

Boiling Point @ 760 mm Hg (°C):	Not Applicable
Vapour Pressure (mm Hg @ 25°C):	Not Applicable
Vapour Density (Air = 1):	Not Applicable
Density (grams/cc):	Not Applicable
Percent Volatile by Volume (%):	Not Applicable
Evaporation Rate (Butyl Acetate = 1):	Not Applicable
Physical State:	Not Applicable
Solubility in Water (% by Weight):	Not Applicable
pH:	Not Applicable
Appearance and Odour:	Geometric solid object

10. STABILITY AND REACTIVITY

Conditions to avoid	Heat above 90°C or incinerate. Deform, mutilate, crush, pierce, or disassemble. Short circuit. Prolonged exposure to humid conditions.
Materials to avoid	N/A
Hazardous decomposition products	Corrosive/Irritant Hydrogen fluoride (HF) is produced in case of reaction of lithium (LiPF ₆) with water. Combustible vapors and formation of Hydrogen fluoride (HF) and phosphorous oxides during fire.

11. TOXICOLOGICAL INFORMATION

The Li-ion batteries do not contain toxic materials

12. ECOLOGICAL INFORMATION

When properly used or disposed, the Li-ion batteries do not present an environmental hazard.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with applicable regulations which vary from country to country. (In more countries, the thrashing of used batteries is forbidden and the end-users are invited to dispose them properly, eventually through not-for-profit organizations, mandated by local governments or organized on a voluntary basis by professionals).

Lithium-Ion batteries should have their terminals insulated and be preferably wrapped in plastic bags prior to disposal.

Incineration: Incineration should never be performed by battery users but eventually by trained professionals in authorized facilities with proper gas and fumes treatment.

14. TRANSPORT INFORMATION

UN Number: 3480

Proper Shipping name: Lithium ion batteries

Hazard Classification: 9

PackagingGroup: N/A

EMS No: F-A S-I

Marine pollutant: No

The LiFePO₄ batteries have been tested and fulfilled the requirements and conditions according to the requirements of the UN manual of tests and Criteria, 38.3 Lithium batteries, Revision 3, Amendment 1 or any subsequent revision;

Meets requirements of International Maritime Dangerous Goods (IMDG)-2014 Special Provision 188 to be transported as non-dangerous goods;

Meets the requirements of US Hazardous Materials Regulations (HMR), Part 49 CFR173.185 to be transported as non-dangerous goods for road, rail, air, and vessel;

Goods shall comply with The International Air Transport Association (IATA) Dangerous Goods Regulations, Packing Instruction 965, Section IB or II (59th Edition, 2018)

If those lithium-ion batteries are packed with or contained in an equipment, then it is the responsibility of the shipper to ensure that the consignment are packed in compliance to the latest edition of the IATA Dangerous Goods Regulations section II of either Packing Instruction 966 or 967 in order for that consignment to be declared as NOT RESTRICTED (non-hazardous/non-Dangerous).

If those lithium-ion batteries are packed with or contained in an equipment, UN No. is UN3481

15. REGULATORY INFORMATION

The regulations following are specifically applied to the safe usage, production, storage, transport and load and unload for dangerous chemicals.

- The Regulations of Safe Management Regarding Dangerous Chemicals (issued by State Council at Feb. 16, 2011)
- The Rules of implementation of Safe Statute Regarding Dangerous Chemicals (No.667 ,1992)
- The Regulations of Safe Use of Dangerous Chemicals in Workplace(No.423,1992)

CONTACT INFORMATION

Australian Poisons Information Centre (24 Hour Service)

Telephone: 13 11 26

Police or Fire Brigade (24 Hours)

Telephone: 000

Ambulance (24 Hours)

Telephone: 000

16. ADDITIONAL INFORMATION

Issue Date: 1st December 2016

Disclaimer:

The information in the SDS was obtained from selected sources/publications which we believe are reliable, but are beyond our direct supervision or control. Super Start Batteries Pty Ltd makes no Warranty of merchantability, fitness for any particular purpose or any other warranty, expressed or implied, with respect to such information and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning Super Start Batteries Pty Ltd's products or questions concerning the content of this SDS please contact your Super Start Batteries representative. Super Start Batteries Pty Ltd reserves the right to revise this Safety Data Sheet as information becomes available. The user has the responsibility, by making contact with this company or otherwise, to make certain the Safety Data sheet being consulted is the latest issued.