

SAFETY DATA SHEET

LiFePO₄ – Lithium Iron Phosphate Batteries

Document No. FES-SDS-01, Version 1.0

1. IDENTIFICATION

Product Name: FES-512 Fusion Lithium Batteries
Other Name: LiFePO₄ Battery, Lithium Iron Phosphate Batteries, Li-ion Battery
Proper Shipping Name: Lithium ion batteries
Use: Electronic storage battery

Details of the supplier of the product

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
Email: batteries@superstart.com.au
Website: <https://superstart.com.au/>
Emergency Number: (02) 9755 7851

2. HAZARD INFORMATION

Classification According to GHS:

The product meets the definition of a manufactured article. In the Globally Harmonized Chemical Classification and Labelling System (GHS) [Rev. 9 (2021) Part 1.3.2.1.1), articles such as batteries, are exempt from GHS SDS classification criteria when operated in accordance with the manufacturers recommendations. 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. The potential for exposure should not exist unless the battery leaks, is exposed to high temperatures or is mechanically, electrically or physically abused or damaged.

Poisons Schedule:

Not Applicable

GHS Label Elements:

Not Applicable

Signal Word:

Not Applicable

IN THE EVENT OF INTERNAL CONTENTS EXPOSED

Hazard statements:

H301 Toxic if swallowed
H314 Causes severe skin burns and eye damage
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.

IN THE EVENT OF INTERNAL CONTENTS EXPOSED

Precautionary Statements - Prevention:

Refer to section 7.

IN THE EVENT OF INTERNAL CONTENTS EXPOSED

Precautionary Statements - Response:

Refer to sections 4, 6 and 8.

3. COMPOSITION / INGREDIENT INFORMATION

Substance	Chemical Symbol	Content (%)	CAS No.
Lithium iron phosphate	LiFePO ₄	36.8	15365-14-7
Graphite	C	17.5	7782-42-5
Ethyl methyl carbonate	C ₄ H ₈ O ₃	14.6	623-53-0
Copper Foils	Cu	8.2	7440-50-8
Aluminium foil	Al	13.6	7429-90-5
Ethylene carbonate	C ₃ H ₄ O ₃	7.3	96-49-1
Lithium hexafluorophosphate(1-)	LiPF ₆	2.0	21324-40-3

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:	<ul style="list-style-type: none"> - Non-combustible - Not considered a significant fire risk. However, in a fire, batteries may produce fumes such as: hydrogen fluoride, phosphorous oxides and carbon dioxide.
Extinguishing media:	CO ₂ , Dry chemical or Foam extinguishers
Special exposure hazards:	<p>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.</p> <p>Eye contact: The electrolyte solution contained in the battery is irritant to ocular tissues.</p> <p>Skin contact: The electrolyte solution contained in the battery causes skin irritation.</p> <p>Ingestion: The ingestion of electrolyte solution causes tissue damage to throat and gastro/respiratory tract.</p> <p>Inhalation: Contents of a leaking or ruptured battery can cause respiratory tract, mucus, membrane irritation and oedema.</p>
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. If the battery is releasing fumes, submerge it under water until the fumes stop.

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; If leaking, smells of medical ether

10. STABILITY AND REACTIVITY

Chemical stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	None under normal conditions.
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	Acids, Oxidizing agents, Bases
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

Irritation	In the event of exposure to internal contents, vapour fumes may be very irritating to the eyes and skin.
Sensitization	N/A
Reproductive Toxicity	N/A
Toxicologically Synergistic Materials	N/A

12. ECOLOGICAL INFORMATION

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. 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 trashing 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 should never be performed by battery users but eventually by trained professionals in authorized facilities with proper gas and fumes treatment.

Deserted batteries shouldn't be treated as ordinary trash. Shouldn't be thrown into fire or placed in high temperature. Shouldn't be dissected, pierced, crushed or treated similarly. Best disposal method is recycling.

14. TRANSPORT INFORMATION**Labels Required:**

Marine Pollutant: No
HAZCHEM: 4W

Land Transport (ADG)

UN Number: 3480
Proper Shipping name: Lithium ion batteries (including lithium ion polymer batteries)
Hazard Classification: 9
Hazard Subsidiary risk: Not Applicable
Packaging Group: Not Applicable
Special Provisions: 188, 230, 310, 348, 376, 377, 387, 390

Air Transport (ICAO / IATA)

UN Number: 3480
Proper Shipping name: Lithium ion batteries (including lithium ion polymer batteries)
Hazard Classification: 9
Hazard Subsidiary risk: Not Applicable
ERG Code: 12FZ
Packaging Group: Not Applicable
Special Provisions: A88, A99, A154, A164, A183, A201, A213, A331, A334, A802
Packing Instructions: Can be shipped by air in accordance with International Civil Aviation Organisation (ICAO) TI or International Air transport Association (IATA) DGR Packing Instructions (PI) 965 IA, PI966, PI967 Section I.

Sea Transport (IMDG)

UN Number: 3480
Proper Shipping name: Lithium ion batteries (including lithium ion polymer batteries)
Hazard Classification: 9
Hazard Subsidiary risk: Not Applicable
Packaging Group: Not Applicable
Environmental Hazard: Not Applicable
EMS Number: F-A, S-I
Special Provisions: 188, 230, 310, 348, 376, 377, 387
Limited Quantities: 0
Shipping may be done in accordance with the IMDG Code 2022 Edition (Amdt 41-22), IMDG Code 2022 (Amdt 41-22)

Transport in bulk according to Annex II of MARPOL and the IBC code

Not Applicable

In addition, to be permitted in transport each lithium cell and battery types must have passed the applicable tests set out in Subsection 38.3 of the UN Manual of Tests and Criteria. The batteries should be well protected against short circuits.

15. REGULATORY INFORMATION

Batteries are exempt from The Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

AUSTRALIA: AICS (Australian Inventory of Chemical Substances); One or more of the CAS listed ingredients are not on the inventory. These ingredients may be exempt or will require registration.

Major applicable regulations for the transportation of lithium-ion cells and batteries are as follows:

- IATA Lithium Battery Guidance Document (2021)
- International Maritime Organization (IMO) International Maritime Dangerous Goods (IMDG) Code, 2022 Edition (inc. Amendment 41-22)
- SafeWork Australia Workplace Exposure Standards for Airborne Contaminants (19 December 2019)

16. ADDITIONAL INFORMATION

Version 1.0 Initial Date: 3rd May 2024

The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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Sample Photo:



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