Safety Data Sheet

Issue Date: 4th Dec 2023	Revision Date: 4th Dec 2023	Version: V01

SECTION 1. IDENTIFICATION

Product Identifier

Product Name: Rechargeable Lithium-ion Battery
Models: SMILE-S5

Other Means of Identification

SDS #: SDS012
Synonyms: Lithium Iron Phosphate (LiFePO4, LFP)
Proper Shipping Name (ADG Code): Lithium-ion Battery
UN/ID No: UN3480

Recommended Use of the Chemical and Restrictions on Use

Recommended Use Energy Storage; Battery Packs

Details of Manufacturer or Importer

Importer Address
Alpha ESS Australia PTY. Ltd.
8/15-21 Gibbes Street, Chatswood, NSW 2067 Australia
+61 02 9000 7676
info@alpha-ess.com
www.alphaess.com

Emergency Phone Number

Emergency Telephone (24 hr) +86 (0) 513-80606891 (China)

SECTION 2. HAZARDS IDENTIFICATION

Classification of the hazardous chemical

EXEMPT FROM HAZARD CLASSES AND CATEGORIES ACCORDING TO AUSTRALIAN GHS.

Label elements, including precautionary statements

No signal word, pictograms, hazard or precautionary statements have been allocated according to GHS.
But there is other label for Transport of Dangerous Goods on package.

Other hazards

This product is a Lithium Iron Phosphate Battery with certified compliance under the UN Recommendations on Transport of Dangerous Goods, Manual of Tests and Criteria, Part III, sub-section 38.3. For the battery cell, chemical materials are stored in a hermetically sealed metal case, designed to withstand temperatures and pressures encountered during normal use. As a result, during normal use, there is no physical danger of ignition or explosion and chemical danger of hazardous materials' leakage. However, if exposed to a fire, added mechanical shocks, decomposed, added electric stress by misuse, the gas release vent will be operated. The battery cell case will be breached at the extreme. Hazardous materials may be released. Moreover, if heated strongly by the surrounding fire, acrid or harmful fume may be emitted.

SECTION 3. COMPOSITION & INFORMATION ON INGREDIENTS

Chemical Name	CAS No	Weight [%]
SPCC-Fe	7439-89-6	15-20
Lithium Iron Phosphate (Lifepo4)	15365-14-7	26-30
Iron	7439-89-6	11-14
Lithium Hexafluorophosphate	21324-40-3	10-12
Copper Metal	7440-50-8	8-12
Carbon	7440-44-0	5-8
Aluminum Metal	7429-90-5	3-7
Polyester Resin	63148-65-2	3-5
Acrylonitrile-butadiene-styrene (ABS)	9003-56-9	1-3
Polyvinylidene Fluoride	24937-79-9	1-3
Polycarbonate	25037-45-0	1-3
Nickel	7440-02-0	0-1

SECTION 4. FIRST AID MEASURES

Description of necessary first aid measures

Eye Contact Rinse eyes with flowering water for 15 minutes and seek medical attention.

Skin Contact Wash the affected area thoroughly with soap and water for 15 minutes and seek medical attention.

Inhalation If internal contents are inhaled, evacuate the contaminated area, and seek medical attention.
Ingestion If ingestion of internal contents occurs, rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration and continue to rinse mouth with water. Seek medical attention immediately.

Symptoms caused by exposure

Symptoms Adverse effects not expected from this product. Exposure to battery contents may cause irritation and potential burns.

Medical attention and special treatment

Notes to Physician Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

In case of fire suitable extinguishing media: carbon dioxide or dry chemical.
Use Novec 1230, FM-200, or dioxide extinguisher.
ABC extinguishers are not effective when the battery pack is on fire

Special hazards arising from chemical

Contents react with water. May explode if exposed to high temperatures due to pressure build up in battery casing. Lithium may burn in a fire situation and may be ejected from the battery. Damaged cells may evolve toxic and flammable vapours.

Specific protective equipment and precautions for firefighters

Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) and protective gear in compliance with the Directive on Personal Protective Equipment 89/686/EEC when combating fire. Use water fog to cool intact containers and nearby storage areas.

Hazchem code
4 Dry Agent (water MUST NOT be allowed to come into contact with substance).
W Risk of violent reaction or explosion. Wear liquid-tight chemical protective clothing and breathing apparatus. Contain spill and run-off.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear Personal Protective Equipment (PPE) as detailed in SECTION 8 of this SDS.

Environmental precautions

See SECTION 12 for additional Ecological Information.

Methods and materials for containment and cleaning up

If spilt, collect and reuse where possible. If battery is broken or damaged, absorb liquid with sand or similar. Contain spillage, then collect and place in suitable containers for disposal.
CAUTION: Avoid exposure to contents.
For waste disposal, see SECTION 13 of the SDS.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

Before use carefully read the product manuals Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

Conditions for safe storage, including any incompatibilities

Store tightly sealed in a cool, dry, well ventilated area, removed from water, incompatible substances, heat or ignition sources and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use. Check regularly for leaks or spills. Store within the recommended limit of -20°C to 45°C. Do not expose to high temperature (55°C). Since short circuit can cause burn hazard or safety vent to open, do not store with metal jewelry, metal covered tables, or metal belt.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure control measures

This product presents no health hazards to the user when used according to label directions for its intended purposes.

Biological monitoring

Ingredient	Determinant	Sampling Time	BEI
Polyvinylidene Fluoride	Fluoride in urine	Prior to shift	2 mg/L
	Fluoride in urine	End of shift	3 mg/L

Reference: ACGIH Biological Exposure Indices

Control banding

Control banding is not used.

Engineering controls

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fume and vapor.

Personal protective equipment (PPE):

Eye Protection: Not necessary under normal use. Wear safety goggles if handling a ruptured or leaking battery cell.

Skin Protection: Not necessary under normal use for hands and body. Wear PVC or rubber gloves if handling a ruptured or leaking battery cell.

Respiratory Protection: Not necessary under normal use. In case of battery or cell rupture, use a self-contained full face respiratory mask.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Battery	Physical state:	Solid
Color:	Not Determined	Ph:	Not Determined
Odour type:	Odorless	Odour threshold:	Not Determined
Melting point:	Not Determined	Freezing point:	Not Determined
Boiling point:	Not Determined	Boiling range:	Not Determined
Flash point	Not Determined	Evaporative rate:	Not Determined
Flammability:	Not Determined	Flammability/explosive limits:	Not Determined
Oxidizing properties:	Not Determined	Viscosity:	Not Determined
Relative density:	Not Determined	Auto-ignition Temperature	Not Determined
Solubility in Water:	Insoluble	Partition coefficient: n-octanol /water	Not Determined
Water/ oil distribution coefficient:	Not Determined	Vapor pressure	Not Determined
Decomposition temperature:	Not Determined	Vapor density: (air = 1)	Not Determined
Saturated vapor concentration	Not Determined	Specific heat value	Not Determined
Particle size	Not Determined	Release of invisible flammable vapors and gases	Not Determined
Size distribution	Not Determined	Shape and aspect ratio	Not Determined
Crystallinity	Not Determined	Dustiness	Not Determined
Surface area	1.35 m^2	Degree of aggregation or agglomeration, and dispersibility	Not Determined

Redox potential	Not Determined	Biodurability or biopersistence	Not Determined
Surface coating or chemistry	Polyester Resin		

SECTION 10. STABILITY AND REACTIVITY

Reactivity:

Not Available

Chemical Stability:

Stable under normal use.

Possibility of hazardous reactions:

Polymerization will not occur.

Conditions to avoid:

Heat above 70°C or incinerate. Deform. Mutilate. Crush. Pierce. Disassemble. Recharge. Short circuit. Expose over a long period to humid conditions.

Incompatible materials:

Battery contents are incompatible with water (evolving flammable gas), oxidizing agents (e.g. hypochlorites), acids (e.g. nitric acid), alkalis (e.g. sodium hydroxide), heat and ignition sources.

Hazardous decomposition products:

May evolve hydrogen and lithium oxides when heated to decomposition.

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Acute toxicity
Information available for the product:
No specific acute toxicity data exists for this product. Batteries consist of a hermetically sealed metallic container containing a number of chemicals and materials of construction that may be hazardous upon release. Over exposure considered unlikely unless battery ruptures and contact with contents occurs. Contents may be harmful.

Inhalation: Toxicity data and effects of inhalation exposure are not available. Not a likely route of exposure under normal use.
Ingestion: Toxicity data and effects of ingestion exposure are not available. Not a likely route of exposure under normal use.
Skin Contact: Toxicity data and effects of skin contact exposure are not available. Not a likely route of exposure under normal use.

Eye Contact: Toxicity data and effects of eye contact exposure are not available. Not a likely route of exposure under normal use.

Component information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Carbon 7440-44-0	> 8000 mg/kg (rat)	-	-

Early onset symptoms and delayed health effect from exposure

Please see SECTION 4 of this SDS for symptoms.

Numerical Measures of Toxicity

Not determined

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

Persistence and degradability

Not determined.

Bioaccumulative potential

Not determined.

Mobility in soil

Not determined.

Other adverse effects:

Not determined.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Disposal of Wastes
Recycling is encouraged. Do NOT dump into sewage or water bodies. Dispose of in accordance with local, state and federal laws and regulations.

Contaminated Packaging
Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

AlphaESS Product listed in Section 1 is designed to comply with standard international shipping regulations including the UN Recommendations on the Transport of Dangerous Good; the IATA Dangerous Goods Regulations and the International Maritime Dangerous Goods Code.

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	3480	3480	3480
Proper Shipping Name	Lithium-ion Battery	Lithium-ion Battery	Lithium-ion Battery
Transport Hazard Class	9	9	9
Packing Group	II	II	II

Environmental hazards for transport purposes

No information provided

Special precautions for user

No information provided

Additional information

No information provided

Hazchem or Emergency Action Code

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SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations

Poison schedule
A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP).

Classifications
Safework Australia criteria is based on the Globally Harmonised System (GHS) of Classification and Labelling of Chemicals.

The classifications and phrases listed below are based on the Approved Criteria for Classifying Hazardous Substances [NOHSC: 1008(2004)].

Hazard codes
None allocated.

Risk phrases
None allocated.

Safety phrases
None allocated.

Inventory listing(s)
AUSTRALIA: AICS (Australian Inventory of Chemical Substances)
All components are listed on AICS, or are exempt.

SECTION 16. OTHER INFORMATION

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