

Safety Data Sheet

SECTION 1. IDENTIFICATION

■ **Product Identifier**

Product Name	Rechargeable Li-ion Battery System EVANTRA-BXB5.12 (204.8V 25Ah 5.12kWh)
Applicable Models	EVANTRA-3.6HS-5.12kWh, EVANTRA-3.6HS-10.24kWh, EVANTRA-5.0HS-5.12kWh, EVANTRA-5.0HS-10.24kWh, EVANTRA-6.0HS-5.12kWh, EVANTRA-6.0HS-10.24kWh

■ **Other Means of Identification**

SDS #	SDS001
Synonyms	Lithium Iron Phosphate (LiFePO ₄ , LFP)
Proper Shipping Name (ADG Code)	LITHIUM ION BATTERIES(including lithium ion polymer batteries)
UN/ID No	UN3480

■ **Recommended Use of the Chemical and Restrictions on Use**

Recommended Use	Energy Storage; Battery Packs
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■ **Details of the Supplier of the Safety Data Sheet**

Supplier Name	Evantra IP Pty Ltd
Supplier Address	74 Agar Drive, Truganina, VIC 3029, Australia
Supplier E-mail	supprot@evantra.com.au
Supplier Telephone	0061417183105

■ **Emergency Phone Number**

Emergency Telephone	0061417183105
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SECTION 2. HAZARDS IDENTIFICATION

Hazard class and label elements of the product according to GHS (the ninth revised edition):

■ **GHS Hazard Class**

This product meets the definition of an article. Under the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), "Articles" as defined in the Hazard Communication Standard (29 CFR 1910.1200) of the Occupational Safety and Health Administration of the United States of America, or by similar definition, are

outside the scope of the system. [Rev.9 (2021) Part 1.3.2.1.1]

■ **GHS Label Elements**

Pictogram Not applicable
Signal Word Not applicable

■ **Hazard Statements**

Not applicable

■ **Precautionary Statements**

Prevention Do not open or disassemble.
 Do not expose to high temperatures or open fire.
 Do not mix with batteries of varying sizes, chemistries or types.
 Avoid using external impact battery.

Response Not applicable

Storage Store under roof in cool, dry, well-ventilated areas.

Disposal Dispose of contents/container in accordance with local/regional/national/ international regulations.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS No.	EC No.	Concentration (weight percent, %)
LiFePO4	15365-14-7	-	38.58
C	7782-42-5	231-955-3	20.51
Cu	7440-50-8	231-159-6	7.7
Al	7429-90-5	231-072-3	6.01
LiPF6	21324-40-3	244-334-7	2.78
(CH2-CF2)n	24937-79-9	200-867-7	0.92
[C6H7O2(OH)2CH2COONa]n	9004-32-4	900-432-4	0.32
C12H14	9003-55-8	-	0.4
CNT	308068-56-6	231-153-3	0.64
C3H2O3	872-36-6	212-825-5	0.4
C3H5O4	96-49-1	202-510-0	5.55
C4H8O3	623-53-0	-	5.55
C5H10O3	105-58-8	203-311-1	5.55
C36H69N3O3X2	24937-16-4	-	0.4
(C3H6)n	9003-07-0	-	4.68

SECTION 4. FIRST AID MEASURES

■ **Description of First Aid Measures**

General Advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Skin Contact	Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.
Protecting of First-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

■ **Most Important Symptoms and Effects, both Acute and Delayed**

- 1 Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.

■ **Indication of Any Immediate Medical Attention and Special Treatment Needed**

- 1 Treat symptomatically.
- 2 Symptoms may be delayed.

SECTION 5. FIRE FIGHTING MEASURES

■ **Extinguishing Media**

Suitable Extinguishing Media Dry chemical, carbon dioxide or alcohol-resistant foam.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter or spread fire.

■ **Specific Hazards Arising from the Substance or Mixture**

- 1 Containers may explode when heated.
- 2 Fire exposed containers may vent contents through pressure relief valves.
- 3 May expansion or decompose explosively when heated or involved in fire.

■ **Advice for Firefighters**

- 1 As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
- 2 Fight fire from a safe distance, with adequate cover.

- 3 Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. ACCIDENTAL RELEASE MEASURE

■ **Personal Precautions, Protective Equipment and Emergency**

Procedures

- 1 Ensure adequate ventilation. Remove all sources of ignition.
- 2 Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
- 3 Use personal protective equipment. Avoid breathing vapours, mist, gas or dust.

■ **Environmental Precautions**

- 1 Prevent further leakage or spillage if safe to do so.
- 2 Discharge into the environment must be avoided.

■ **Methods and Materials for Containment and Cleaning Up**

- 1 Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
- 2 Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.
- 3 Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment.

SECTION 7. HANDLING AND STORAGE

■ **Precautions for Handling**

- 1 Handling is performed in a well ventilated place.
- 2 Wear suitable protective equipment.
- 3 Avoid contact with skin and eyes.
- 4 Keep away from heat/sparks/open flames/ hot surfaces.
- 5 Take precautionary measures against static discharges.

■ **Precautions for Storage**

- 1 Keep containers tightly closed.
- 2 Keep containers in a dry, cool and well-ventilated place.
- 3 Keep away from heat/sparks/open flames/ hot surfaces.
- 4 Store away from incompatible materials and foodstuff containers.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

■ **Control Parameters**

Occupational Exposure Limit Values

Component	Country/Region	Limit Value - Eight Hours		Limit Value - Short Term	
		ppm	mg/m ³	ppm	mg/m ³
C 7782-42-5	USA-OSHA	-	15	-	-
	South Korea	-	2	-	-
	Ireland	-	10	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	2.5	-	5
	Australia	-	3(4)	-	-
Cu 7440-50-8	The Netherlands	-	0.1	-	-
	Poland	-	0.2	-	-
	Latvia	-	0.5	-	1
	Germany (DFG)	-	0.01	-	0.02
	USA -OSHA	-	15	-	-
	South Korea	-	10	-	-
Al 7429-90-5	Ireland	-	1	-	-
	Germany (DFG)	-	4	-	-
	Denmark	-	5	-	10
	Australia	-	10	-	-

Biological Limit Values

Component	Source	Biological monitoring index	Biological limits value	Sampling time	Remark
LiPF6	SCOEL(EU)	Fluorine/urine	8mg/L	end of shift	

Monitoring Methods

- 1 EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
- 2 GBZ/T 160 Determination of toxic substances in workplace air (Series effective standard) and GBZ/T 300 Determination of toxic substances in workplace air (Series standard).

■ Engineering Controls

- 1 Ensure adequate ventilation, especially in confined areas.
- 2 Ensure that eyewash stations and safety showers are close to the workstation location.
- 3 Use explosion-proof electrical/ventilating/lighting/equipment.
- 4 Set up emergency exit and necessary risk-elimination area.

■ Personal Protection Equipment

Eye Protection	Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US).
Hand Protection	Wear protective gloves (such as butyl rubber) , passing the tests according to EN 374(EU),US F739 or AS/NZS 2161.1 standard.
Respiratory protection	If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with

multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.

Skin and Body Protection

Wear fire/flame resistant/retardant clothing and antistatic boots.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Lithium ion Battery, individually packaged

Odor Threshold: No information available

Melting Point/Freezing Point (°C): No information available

Flash Point (°C)(Closed Cup): Not applicable

Flammability: No information available

Vapor Pressure (KPa): Not applicable

Relative Density(Water=1): No information available

n-Octanol/Water Partition Coefficient: No information available

Decomposition Temperature (°C): No information available

Particle characteristics: No information available

Odor: No information available

pH: No information available

Initial Boiling Point and Boiling Range (°C): No information available

Evaporation Rate: Not applicable

Upper/lower explosive limits[% (v/v)]: Upper limit: No information available; Lower limit: No information available

Relative Vapour Density(Air=1): Not applicable

Solubility: No information available

Auto-Ignition Temperature(°C): No information available

Kinematic Viscosity (mm²/s): Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Contact with incompatible substances can cause decomposition or other chemical

Chemical Stability

Stable under proper operation and storage conditions.

Possibility of Hazardous Reactions

Mixtures with metallic acetylene, when heated, cause a fire or incandescence. Reacts severely with halogens, interhalogens or other strong oxidants, or causes a fire. Ultrafine powder will self-ignite in the air at room temperature.

Conditions to Avoid

Incompatible materials, heat, flame and spark.

Incompatible Materials

Metal acetylide, halogen, interhalogen, halogen oxides, nitric acid, nitrous oxide, nitrates, nitrites, halogen oxyacid salts, chromates, permanganates, inorganic peroxides, metal oxides and peroxyformic acid. Halogen, interhalogen, strong oxidant, water and acids. Oxidants, halogen, interhalogen and mercury.

Hazardous Decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION II. TOXICOLOGICAL INFORMATION

■ **Acute Toxicity**

Component	CAS No.	LD ₅₀ (Oral)	LD ₅₀ (Dermal)	LC ₅₀ (Inhalation, 4h)
C3H5O4	96-49-1	10000mg/kg(Rat)	> 3000mg/kg (Rabbit)	No information available
Al	7429-90-5	50-300mg/kg(Rat)	275mg/kg (Rat)	No information available
[C6H7O2(OH)2CH2COONa]n	9004-32-4	27000mg/kg(Rat)	> 2000mg/kg (Rabbit)	> 5.8mg/L (Rat)
LiPF6	21324-40-3	1702mg/kg(Rat)	275mg/kg (Rat)	No information available
C4H8O3	623-53-0	695mg/kg(Rat)	> 20000mg/kg (Rabbit)	47.702mg/L (Rat)
C3H2O3	872-36-6	300~500mg/kg(Rat)	200~2000mg/kg (Rat)	No information available

■ **Skin Corrosion/Irritation**

No information available

■ **Serious Eye Damage/Irritation**

No information available

■ **Skin Sensitization**

No information available

■ **Respiratory Sensitization**

No information available

■ **Germ Cell Mutagenicity**

No information available

■ **Carcinogenicity**

ID	CAS No.	Component	IARC	NTP
1	15365-14-7	LiFePO4	Not Listed	Not Listed
2	7782-42-5	C	Not Listed	Not Listed
3	7440-50-8	Cu	Not Listed	Not Listed
4	7429-90-5	Al	Not Listed	Not Listed

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5	21324-40-3	LiPF ₆	Not Listed	Not Listed
6	24937-79-9	(CH ₂ -CF ₂) _n	Not Listed	Not Listed
7	9004-32-4	[C ₆ H ₇ O ₂ (OH) ₂ CH ₂ COONa] _n	Not Listed	Not Listed
8	9003-55-8	C ₁₂ H ₁₄	Category 3	Not Listed
9	308068-56-6	CNT	Category 2B or 3	Not Listed
10	872-36-6	C ₃ H ₂ O ₃	Not Listed	Not Listed
11	96-49-1	C ₃ H ₅ O ₄	Not Listed	Not Listed
12	623-53-0	C ₄ H ₈ O ₃	Not Listed	Not Listed
13	105-58-8	C ₅ H ₁₀ O ₃	Not Listed	Not Listed
14	24937-16-4	C ₃₆ H ₆₉ N ₃ O ₃ X ₂	Not Listed	Not Listed
15	9003-07-0	(C ₃ H ₆) _n	Category 3	Not Listed

■ **Reproductive Toxicity**

No information available

■ **Reproductive Toxicity (Additional)**

No information available

■ **STOT-Single Exposure**

No information available

■ **STOT-Repeated Exposure**

No information available

■ **Aspiration Hazard**

No information available

SECTION 12. ECOLOGICAL INFORMATION

■ **Acute Aquatic Toxicity**

Component	CAS No.	Fish	Crustaceans	Algae
Al	7429-90-5	LC ₅₀ : 1.55mg/L (96h)(Fish)	No information available	No information available
[C ₆ H ₇ O ₂ (OH) ₂ CH ₂ COONa] _n	9004-32-4	No information available	EC ₅₀ : 87.3mg/L (48h)	No information available
Cu	7440-50-8	LC ₅₀ : 0.665mg/L (96h)(Fish)	EC ₅₀ : 0.02mg/L (48h)	ErC ₅₀ : 7.9mg/L (96h)

■ **Chronic Aquatic Toxicity**

■ **Others**

Persistence and Degradability
Bioaccumulative Potential
Mobility in Soil

No information available
No information available
No information available
LiFePO₄ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
Cu does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
Al does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
LiPF₆ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
(CH₂-CF₂)_n does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
[C₆H₇O₂(OH)₂CH₂COONa]_n does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C₁₂H₁₄ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
CNT does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C₃H₂O₃ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C₃H₅O₄ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C₄H₈O₃ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C₅H₁₀O₃ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
C₃₆H₆₉N₃O₃X₂ does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.
(C₃H₆)_n does not meet the criteria for PBT and vPvB according to Regulation (EC) No 1907/2006, annex XIII.

Results of PBT and vPvB Assessment

SECTION 13. DISPOSAL CONSIDERATIONS

Waste Chemicals Contaminated Packaging Disposal Recommendations

Before disposal should refer to the relevant national and local laws and regulation. Containers may still present chemical hazard when empty. Keep away from hot and

ignition source of fire. Return to supplier for recycling if possible.

Refer to Waste chemicals and Contaminated packaging.

SECTION 14. TRANSPORT INFORMATION

Transporting Label



Marine pollutant	No
UN Number	3480
UN Proper Shipping Name	LITHIUM ION BATTERIES(including lithium ion polymer batteries)
Transport Hazard Class	9
Transport Subsidiary Hazard Class	NONE
Packing Group	Packagings shall conform to the packing group II performance level
Report remarks	According to United Nations Recommendations on the Transports of Dangerous Goods•Model Regulations, Lithium batteries could be transported in accordance with the classification conclusions of this report when meet the requirements of UN38.3 test.

SECTION 15. REGULATORY INFORMATION

International Chemical Inventory

Component	EINECS	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AICS	ENCS
LiFePO4	✓	✓	✓	✗	✗	✗	✓	✗	✗
C	✓	✓	✓	✓	✓	✓	✓	✓	✗
Cu	✓	✓	✓	✓	✓	✓	✓	✓	✗
Al	✓	✓	✓	✓	✓	✓	✓	✓	✗
LiPF6	✓	✓	✗	✓	✗	✓	✓	✓	✗
(CH2-CF2)n	✗	✓	✓	✓	✓	✓	✓	✓	✓
[C6H7O2(OH)2CH2COONa]n	✗	✓	✓	✓	✓	✓	✓	✓	✓
C12H14	✗	✓	✓	✓	✓	✓	✓	✓	✓
CNT	✗	✗	✗	✗	✗	✗	✗	✗	✗
C3H2O3	✓	✓	✗	✓	✗	✗	✓	✗	✗
C3H5O4	✓	✓	✓	✓	✓	✓	✓	✓	✓
C4H8O3	✓	✓	✗	✓	✗	✓	✓	✗	✗
C5H10O3	✓	✓	✓	✓	✓	✓	✓	✓	✓
C36H69N3O3X2	✗	✗	✗	✓	✓	✓	✓	✓	✓

(C3H6)n × ✓ ✓ ✓ ✓ ✓ ✓ ✓

- [EINECS] European Inventory of Existing Commercial Chemical Substances.
- [TSCA] United States Toxic Substances Control Act Inventory.
- [DSL] Canadian Domestic Substances List.
- [IECSC] China Inventory of Existing Chemical Substances.
- [NZIoC] New Zealand Inventory of Chemicals.
- [PICCS] Philippines Inventory of Chemicals and Chemical Substances.
- [KECI] Existing and Evaluated Chemical Substances.
- [AICS] Australia Inventory of Chemical Substances.
- [ENCS] Existing and New Chemical Substances.

Note

“ ✓ ” Indicates that the substance included in the regulations

“ × ” That no data or included in the regulations

SECTION 16. ADDITIONAL INFORMATION

Creation Date	Nov.8,2022
Revision Date	Nov.8,2022
Reason for Revision	-

■ **Disclaimer**

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 9th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user's reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.

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