SAFETY DATA SHEET

According to Hazard Communication standard (OSHA HCS) 29 CFR 1910.1200

1. Identification

Date:	September 10, 2026
Sample Name:	ELiMENT® Battery, 12V, 300Ah - Premium Plus
Sample Model:	E-12V300-PPSK-01
Rating:	12.8V/300Ah/3840Wh Weight: 28.000kg
Recommended Use:	Rechargeable lithium-iron phosphate battery
Restrictions on Use:	Not known. Read SDS before using product.
Manufacturer:	Vanair®, a Lincoln Electric Company
Address:	10896 West 300 North, Michigan City, Indiana,
Telephone Number:	46360+1 (800) 526-8817
24/7 Contact:	CHEMTREC (USA) +1 (800) 424-9300 CHEMTRE Customer Number (CCN): 84884

2. Hazard(s) Identification

(a) Preparation hazards and classification

No harm at the normal use. When the battery is in extreme pressure deformation, high-temperature environment, overload, short-circuit condition, or disassemble the battery, an explosion of fire and chemical burn hazards may occur.

(b) Primary Route(s) of Exposure

These chemicals are contained in a sealed stainless steel enclosure or a sealed aluminums foil pocket. Risk of exposure occurs only if the cell is mechanically, thermally or electrically abused to the point of compromising the enclosure. If this occurs, exposure to the electrolyte solution contained within can occur by inhalation, ingestion, eye contact and skin contact.

(c) Potential Health Effects :

ACUTE (short term): See section 8 for exposure controls In the event that this battery has been ruptured, the electrolyte solution contained within the battery would be corrosive and can cause burns.

Inhalation : A battery volatilizes no gas unless it was damaged. Damaged battery will volatilize little gas that may stimulate the respiratory tract or cause an anaphylaxis in serious condition. Exposure to leaking electrolyte can cause burns and irritation of the respiratory system, coughing, wheezing, and shortness of breath.

Ingestion : The ingestion of the battery can be harmful. Content of open battery can cause tissue damage to throat and serious chemical burns of mouth, esophagus and gastrointestinal tract.

Skin : In normal condition, contact between the battery and skin will not cause any harms. Contact with a damaged battery and the corrosive electrolyte solution may cause skin allergies, irritation, or chemical burns.

Eye : In normal condition, contact between the battery and eyes will not cause any harms. However, the gas volatilize from a damaged battery may be harmful to eyes. Exposure to the electrolyte solution can cause redness, tearing, or burns. The electrolyte is corrosive to all ocular tissues.

CHRONIC (long term): See Section 11 for additional toxicological data.

(d)Medical Conditions Aggravated by Exposure
No information available.
(e)Reported as carcinogen
No information available.
GHS Label elements, including precautionary statements GHS


GHS02

GHS05

GHS06

Signal word : Warning
Hazard statement(s):
H242:Heating may cause a fire ;
H311: Toxic in contact with skin ;
H314:Causes severe skin burns and eye damage ;
H302:Harmful if swallowed ;
H332:Harmful if inhaled ;
Precautionary statements :
Prevention :
P264 Wash thoroughly after handling .
P270 Do not eat, drink or smoke when using this product .
P280 Wear protective gloves/protective clothing/eye protection/face protection .
P261 Avoid brething dust/fume/gas/mist/vapours/spray .
P271 Use only outdoors or in a well-ventilated area .
Response :
P312:Call a Poison center or doctor/physician if you feel unwell.

P302+P350-IF ON SKIN: Gently wash with plenty of soap and water

P301+P330+P331-IF SWALLOWED: rise mouth. Do NOT induce vomiting

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Disposal：
P501: Dispose of contents/container in accordance with local/national regulations.

Hazards not otherwise classified (HNOC)
Not Applicable

Environment harm: Not necessary under conditions of normal use.
Explosion danger: The battery may be explosive at high temperature (above 60° C) or exposing to the fire.

3. Composition/Information on Ingredients

(a) **Mixtures information**

Chemical Composition	Chemical Formula	CAS No.	Weight (%)
Lithium Iron Phosphate	$LiFePO_4$	15365-14-7	24
Graphite	C	7782-42-5	10 - 30
Lithium hexafluorophosphate	$LiPF_6$	21324-40-3	23
Copper	Cu	7440-50-8	7-13
Aluminium	Al	7429-90-5	5-10
Nickel	Ni	7440-02-0	1-5

4. First-Aid Measures

(a) Description of first aid measures

Skin contact: Not anticipated. If the battery is leaking and the contained material contacts the skin, flush with copious amounts of clear water for at least 15 minutes.

Eye contact: Not anticipated. If the battery is leaking and the contained material contacts eyes, flush with copious amounts of clear water for at least 15 minutes. Get medical attention at once.

Inhalation: Not anticipated. If the battery is leaking, remove to fresh air. If irritation persists, consult a physician.

Ingestion: Not anticipated. If the battery is leaking and the contained material is ingested, rinse mouth and surrounding area with clear water at once. Consult a physician immediately for treatment.

b) Most important symptoms/effects, acute and delayed
Contact with internal components may cause allergic skin sensitization (rash) and irritate eyes, skin, nose, throat, respiratory system.
(c) Immediate medical attention and special treatment
No information available.

5. Fire Fighting Measures

Unusual Fire and Explosion Hazards: Battery may explode or leak potentially hazardous vapors subject to: exposed to excessive heat (above the maximum rated temperature as specified by the manufacturer) or fire, over-charged, short circuit, punctured and crushed.

Hazardous Combustion Products: Fire, excessive heat, or over voltage conditions may produce hazardous decomposition products. Damaged batteries can result in rapid heating and the release of flammable vapors.

Extinguishing Media: Dry chemical type extinguishers are the most effective means to extinguish a battery fire. A CO_2 extinguisher will also work effectively.

Fire Fighting Procedures: Use a positive pressure self-contained breathing apparatus if batteries are involved in a fire. Full protective clothing is necessary. During water application, caution is advised as burning pieces of flammable particles may be ejected from the fire.

6. Accidental Release Measures

The material contained within the battery would only be released under abusive conditions. In the event of battery rupture and leakage, collect all the released materials that are not hot or burning in an appropriate waste disposal container while wearing proper protective clothing and ventilate the area. Placed in approved container and disposed according to the local regulations.

(a) Personal precautions, protective equipment and emergency procedures

If the Lithium battery material is released, remove personnel from area until fumes dissipate. Provide maximum ventilation to clear out hazardous gases. The preferred response is to leave the area, dispose the case after the batteries cool and vapors dissipate. Provide maximum ventilation. Avoid skin and eye contact or inhalation of vapors.

(b) Environmental Precautions

Prevent material from contaminating soil and from entering sewers or waterways.

(c) Methods and materials for containment and cleaning up

If battery casing is dismantled, small amounts of electrolyte may leak. Collect all released material in a plastic lined container. Dispose off according to the local law and rules. Avoid leached substances to get into the earth, canalization or waters.

7. Handling and Storage

Handling:

1. Batteries are designed to be recharged. However, improperly charging a battery may cause the battery to flame. When charging the battery, use dedicated chargers and follow the specified conditions.
2. Never disassemble or modify a battery.
3. Do not immerse, throw, and wet a battery in water.
4. Should a battery unintentionally be crushed, thus releasing its contents, rubber gloves must be used to handle all battery components. Avoid the inhalation of any vapors that may be emitted.
5. Short circuit causes heating. In addition, short circuit reduces the life of the battery and can lead to ignition of surrounding materials. Physical contact with to

short-circuited battery can cause skin burn.

6. Avoid reversing the battery polarity, which can cause the battery to be damaged or flame.
7. In the event of skin or eye exposure to the electrolyte, refer to Section 4, First Aid Measures.

Storage:

1. Batteries should be separated from other materials and stored in a noncombustible, well ventilated, sprinkler-protected structure with sufficient clearance between walls and battery stacks. Do not place batteries near heating equipment, nor expose to direct sunlight for long periods.
2. Do not store batteries above 35℃ or below –20℃. Store batteries in a cool (about 20±5℃) in a long time, dry and ventilated area that is subject to little temperature change. Elevated temperatures can result in reduced battery cycle life. Battery exposure to temperatures in excess of 65℃ will result in the battery venting flammable liquid and gases.
3. Keep batteries in original package until use and do not jumble them.

8. Exposure Controls/Personal Protection

Engineering Controls: Keep away from heat and open flame.
Ventilation: Not necessary under conditions of normal use. In case of abuse, use adequate mechanical ventilation (local exhaust) for the battery that vent gas or fumes.
Respiratory Protection: Not necessary under conditions of normal use. If battery is burning, leave the area immediately. During fire fighting fireman should use self-contained breathing, full-face respiratory equipment. Fires may be fought but only from safe fire fighting distance, evacuate all persons from the area of fire immediately.
Eye Protection: Not necessary under conditions of normal use. Use safety glasses with side shields if handling a leaking or ruptured battery.

Body Protection: Not necessary under conditions of normal use. Use rubber apron and protective working in case of handling a leaking of ruptured battery.
Protective Gloves: Not necessary under conditions of normal use. Use chemical resistant rubber gloves if handling a leaking or ruptured battery.
Others: Use good chemical hygiene practice. Wash hands thoroughly after cleaning-up a battery spill caused by leaking battery. No eating, drinking, or smoking in battery storage area.

9. Physical and Chemical Properties

State:	Solid
Odor:	N/A
PH:	N/A
Vapor pressure:	N/A
Vapor density:	N/A
Boiling point:	N/A
Solubility in water:	Insoluble
Specific gravity:	N/A
Density:	N/A

10. Stability and Reactivity

Stability: Stable
Conditions to Avoid: Do not heat, throw into fire, disassemble, short circuit, immerse in water or overcharge, etc.
Incompatibility: None during normal operation. Avoid exposure heat, open flame and corrosives.
Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: The battery may release irritative gas once the electrolyte leakage.

11. Toxicological Information

The battery does not elicit toxicological properties during routine handling and use. If the battery is opened through misuse or damage, discard immediately. Internal components of cell are irritant and sensitization.

Irritancy: The electrolytes contained in this battery can irritate eyes with any contact. Prolonged contact with the skin or mucous membranes may cause irritation.

Sensitization: No information is available.

Teratogenicity: No information is available.

Carcinogenicity: No information is available.

Mutagenicity: No information is available.

Reproductive toxicity: No information is available.

12. Ecological Information

1. When properly used and disposed, the battery does not present environmental hazard.

2. The battery does not contain mercury, cadmium, or lead.

3. Do not let internal components enter marine environment. Avoid releasing to water ways, wastewater or ground water.

13. Disposal Considerations

1. Disposal of the battery should be performed by permitted, professional disposal firms knowledgeable in Federal, State or Local requirements of hazardous waste treatment and hazardous waste transportation.
2. The battery should be completely discharged prior to disposal and/or the terminals taped or capped to prevent short circuit. When completely discharged it is not considered hazardous.
3. The battery contains recyclable materials. Recycling options available in your local area should be considered when disposing of this product, through licensed waste Carrier.

14. Transport Information

Label for conveyance	Lithium Battery Label
UN Number	UN 3480 or UN 3481
Transport hazard class(es)	9
Packing group	965 or 966 II 967 --
Marine pollutant	No
UN Proper shipping name	Lithium ion Batteries (Including lithium ion polymer batteries) Lithium ion Batteries packed with equipment (Including lithium ion polymer batteries) Lithium ion Batteries contained in equipment (Including lithium ion polymer batteries)
ICAO/IATA	Can be shipped by air in accordance with international Civil Aviation Organization (ICAO), TI or International Air Transport Association (IATA) DGR 67th Packing Instructions Section IA of 965 or Section I of 966～967 appropriately.

IMDG CODE	International Maritime Dangerous Goods Code IMDG CODE (Amdt 42-24)
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail

The dangerous goods regulations require that each battery design be subject to tests contained in Section 38.3 of the UN Manual of Tests and Criteria prior to being offered for transport.

15. Regulatory Information

《Dangerous Goods Regulations》
《Recommendation on the Transport of Dangerous Goods Model Regulations》
《International Maritime Dangerous Goods》
《Technical Instructions for the Safe Transport of Dangerous Goods》
《Classification and code of dangerous Goods》
《Consumer Product Safety Act》(CPSA)
《Federal Environmental Pollution Control Act》(FEPCA)
《Resource Conservation and Recovery Act》(RCRA)
《European Agreement concerning the International Carriage of Dangerous》
《Regulations concerning the International Carriage of Dangerous》
In according with all Federal, State and local laws.

16. Other Information

The information above is believed to be accurate and represents the best information currently available to us. However, this document makes no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. Although reasonable precautions have been taken in the preparation of the data contained herein, it is offered solely for your information, consideration and investigation. This material safety data sheet provides guidelines for the safe handling and use of this product; it does not and cannot advise on all possible situations, therefore, your specific use of this product should be evaluated to determine if additional precautions are required.

* The MSDS is prepared based on the information provided by client. The contents and formats of this MSDS are revised as per client's request.

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