



Report No.: 18270BC40126801

SDS REPORT

Client Name : VANAIR® MANUFACTURING, INC

Address : 10896 W 300N, MICHIGAN CITY, IN, 46360 USA

Product Name : ELiMENT® LiFePO4 Battery

Effective Date : Apr. 17, 2024

Shenzhen Anbotek Compliance Laboratory Limited



Chemtrec, LLC

Code: AB-AB-64-b

Address: 2900 Fairview Park Drive, Falls Church, VA 22042-4513

1-800-262-8200 (USA) 1-703-741-5500 (International)

SAFETY DATA SHEET

According to HCS-2012 APPENDIX D TO §1910.1200 (Version: 1.0/EN)

1. Identification

Sample name: ELiMENT® LiFePO4 Battery
Sample model: 283405 & 282288
Rating: Battery Nominal Voltage: 51.2V
Rated Capacity: 100Ah, 5120Wh
Weight: 43.2kg
Manufacturer: VANAIR® MANUFACTURING, INC
Address: 10896 W 300N, MICHIGAN CITY, IN, 46360 USA
Factory: Shenzhen Southking Technology Co., Ltd
Address: 2nd/4th Floor, Building 1, No. 596 Zhoushi Road, Jiuwei Community, Hangcheng Street, Baoan District, Shenzhen City, Guangdong Province, China
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Date of received: Mar. 30, 2024
Date of report: Apr. 17, 2024

Written by: *Mae Lee*

Approved by: *Delijiang*

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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 aluminum 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.

Ingestion: Swallowing battery will be damaged to the respiratory tract and cause chemical burns to the stomach; in serious conditions it will cause permanent damage.

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

Eye: In normal condition, contact between the battery and eyes will not cause any harms. However, the gas volatilized from a damaged battery may be harmful to eyes.

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:



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 breathing 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

3. Composition/Information on Ingredients

Chemical Name	Percent of Content	CAS No.
Lithium iron phosphate (LiFePO ₄)	28%	12057-17-9
Graphite (C)	17%	7782-42-5
LiPF ₆	15%	21324-40-3
Aluminum(AL)	8%	7429-90-5
Copper(Cu)	12%	7440-50-8
High molecular polymer	5%	--
Nickel (Ni)	2%	7440-02-0
Iron (Fe)	13%	7439-89-6

4. First-Aid Measures

(a) Description of first aid measures

Inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice / attention if you feel unwell.

Skin contact: Remove contaminated clothes and rinse the skin with plenty of water. Get medical advice /attention if you feel unwell.

Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice / attention if you feel unwell.

Ingestion: Have victim drink 60 to 240 mL (2-8 oz.) of water. and DO NOT induce vomiting. Get medical aid.

(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. Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

(c) Immediate medical attention and special treatment

No information available.

5. Fire-Fighting Measures

(a) Extinguishing media

Suitable extinguishing media: Use foam, dry powder or dry sand, CO₂ as appropriate.

Unsuitable extinguishing media: No information available.

(b) Special hazards arising from the chemical

Under fire conditions, batteries may burst and release hazardous decomposition products when exposed to a fire situation. This could result in the release of flammable or corrosive materials. Hazardous combustion products: CO, CO₂, Metal oxides, Irritating fumes.

(c) Special protective equipment and precautions for fire-fighters

Firefighters must wear fire resistant protective equipment and appropriate breathing apparatus. The staff must equip with filtermask (full mask) or isolated breathing apparatus. The staff must wear the clothes which can defense the fire and the toxic gas. Put out the fire in the upwind direction. Remove the container to the open space as soon as possible. Spray water on the containers in the fireplace to keep them cool until finish extinguishment.

6. Accidental Release Measures

(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

(a) Precautions for safe handling

Always follow the warning information on the batteries and in the manuals of devices. Only use the recommended battery types. Keep batteries away from children. For devices to be used by children, the battery casing should be protected against unauthorized access. Unpacked batteries shall not lie about in bulk. In case of battery change always replace all batteries by new ones of identical type and brand. Do not swallow batteries. Do not throw batteries into water. Do not throw batteries into fire. Avoid deep discharge. Do not short-circuit batteries Use recommended charging time and current.

(b) Conditions for safe storage, including any incompatibilities

If the Lithium battery is subject to storage for such a long term as more than 3 months, it is recommended to recharge the Lithium battery periodically. Operating temperature: Charge: 0°C~45°C. Discharge: -10°C~50°C. And recommended at -10°C~45°C for 1 month storage, at -10°C~35°C for 3 months storage. The capacity recovery rate in the delivery state (50% capacity of fully charged) after storage is assumed to be 80% or more. The voltage for a long time storage shall be 3.7V~4.2V range per cell block. Do not storage Lithium battery haphazardly in a box or drawer where they may short-circuit each other or be short-circuited by other metal objects. Keep out of reach of children.

8. Exposure Controls/Personal Protection

(a) Engineering Controls

Use local exhaust ventilation or other engineering controls to control sources of dust, mist, fumes and vapor. Keep away from heat and open flame. Store in a cool, dry place.

(b) Personal Protective Equipment

Respiratory Protection: Not necessary under normal conditions. Skin and body

Protection: Not necessary under normal conditions, Wear neoprene or nitrile rubber gloves if handling an open or leaking battery.

Hand protection: Wear neoprene or natural rubber material gloves if handling an open or leaking battery.

Eye Protection: Not necessary under normal conditions, wear safety glasses if handling an open or leaking battery.

(c) Other Protective Equipment

Have a safety shower and eye wash fountain readily available in the immediate work area.

(d) Hygiene Measures

Do not eat, drink, or smoke in work area. Maintain good housekeeping.

9. Physical and Chemical Properties

(a) Appearance	Solid
(b) Odor	Monotony
(c) Odor threshold	Not available.
(d) pH	Not available.
(e) Melting point/freezing point	Not available.
(f) Initial boiling point and boiling range	Not available.
(g) Flash poin	Not available.
(h) Evaporation rate	Not available.
(i) Flammability	Not available.
(j) Upper/lower flammability or explosive limits	Not available.
(k) Vapor pressure	Not available.
(l) Vapor density	Not available.
(m) Relative density	Not available.
(n) Solubility(ies)	Not available.
(o) Partition coefficient: n-octanol/water	Not available.
(p) Auto-ignition temperature	130°C
(q) Decomposition temperature	Not available.
(r) Viscosity	Not available.

10. Stability and Reactivity

(a) Reactivity

Stable under recommended storage and handling conditions.

(b) Chemical stability

Stable under normal conditions.

(c) Possibility of hazardous reactions

When heated above 150°C the risk of rupture occurs. Due to special safety construction, rupture implies cont release of pressure without ignition.

(d) Conditions to avoid

Do not subject Lithium battery to mechanical shock. Keep away from open flames, high temperature.

(e) Incompatible materials

Strong oxidizer, strong acid.

(f) Hazardous decomposition products

Under fire conditions, the electrode materials can form carcinogenic nickel and cobalt oxides.

11. Toxicological Information**(a) Information on the likely routes of exposure**

Inhalation: Inhalation of a large number of vapors or fumes released due to heat may cause respiratory.

Ingestion: Ingestion of battery contents may cause mouth, throat and intestinal burns and damage.

Skin contact: Contact with battery electrolyte may cause burns and skin irritation.

Eye contact: Contact with battery electrolyte may cause burns. Eye damage is possible.

Under normal conditions (during charge and discharge) release of ingredients does not occur. If accidental release occurs see information in section 2, and 4. Swallowing of a battery can be harmful. Call the local Poison Control Centre for advice and follow-up.

(b) Information on toxicological characteristics

Acute toxicity: No data available.

Skin corrosion/irritation: The liquid in the battery irritates.

Serious eye damage/irritation: The liquid in the battery irritates.

Respiratory sensitization: The liquid in the battery may cause sensitization to some person.

skin sensitization: The liquid in the battery may cause sensitization to some person.

Carcinogenicity: Cobalt and Cobalt compounds are considered to be possible human carcinogen(s).

Germ Cell Mutagenicity: No data available.

Reproductive Toxicity: No data available.

STOT-Single Exposure: No data available.

STOT-Repeated Exposure: No data available.

Aspiration Hazard: No data available.

12. Ecological Information

(a) Ecotoxicity

Water hazard class 1 (Self-assessment): slightly hazardous for water.

(b) Persistence and Degradability

No information available.

(c) Bioaccumulative potential

No information available.

(d) Mobility in soil

No information available.

(e) Other adverse effects

No information available.

13. Disposal Considerations

(a) Safe handling and methods of disposal

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Product disposal recommendation: Observe local, state and federal laws and regulations.

Packaging disposal recommendation: Be aware discarded batteries may cause fire, tape the battery terminals to insulate them. Don't disassembly the battery. Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local, state and federal laws and regulations.

The potential effects on the environment and human health of the substances used in batteries and accumulators;

the desirability of not disposing of waste batteries and accumulators as unsorted municipal waste and of participating in their separate collection so as to facilitate treatment and recycling.

14. Transport Information

According to PACKING INSTRUCTION 965~ 967 of IATA DGR 65th Edition for transportation, the special provision 230 of IMDG (inc Amdt 41-22). The batteries should be securely packed and protected against short-circuits. Examine whether the package of the containers are integrate and tighten closed before transport. Take in a cargo of them without falling, dropping, and breakage. Prevent collapse of cargo piles. Don't put the goods together with oxidizer and chief food chemicals. The transport vehicle and ship should be cleaned and sterilized before transport. During transport, the vehicle should prevent exposure, rain and high temperature. For stopovers, the

vehicle should be away from fire and heat sources. When transported by sea, the assemble place should keep away from bedroom and kitchen, and isolated from the engine room, power and fire source. Under the condition of Road Transportation, the driver should drive in accordance with regulated route, don't stop over in the residential area and congested area.

(a) UN number

3480&3481

(b) UN Proper shipping name

LITHIUM ION BATTERIES (including lithium ion polymer batteries) or; LITHIUM ION BATTERIES CONTAINED IN EQUIPMENT or LITHIUM ION BATTERIES PACKED WITH EQUIPMENT (including lithium ion polymer batteries)

(c) Packing Instruction (if applicable)

965 IA, 966 I, 967 I

(d) Marine pollutant (Yes/No)

No

(e) Transport in bulk (according to Annex II of MARPOL 73/78 and the IBC Code)

No information available.

(f) Special precautions

No information available.

15. Regulatory Information

OSHA hazard communication standard (29 CFR 1910.1200)

_____ Hazardous V Non-hazardous

16. Other Information

(a) Preparation and revision information

Date of previous revision: Not applicable.

Date of this revision: 2022-01-01

Revision summary: The first New SDS

(b) Abbreviations and acronyms

TSCA: Toxic Substances Control Act, The American chemical inventory.

DSL: Domestic Substances List

EINECS: European Inventory of Existing Commercial chemical Substances

ENCS: Japanese Existing and New Chemical Substances

ECL: Existing Chemicals List, the Korean chemical inventory

IECSC: Inventory of existing chemical substances in China.

(c) Disclaimer

Because all of our batteries are defined as "articles", they are exempted from the requirements of the Hazard Communication Standard. The information in this SDS is

provided all the relevant data fully and truly. However, the information is provided without any warranty on their absolute extensiveness and accuracy. This SDS was prepared to provide safety preventive measures for the users who have got professional training. The personal user who obtained this SDS should make independent judgment for the applicability of this SDS under special conditions. In these special cases, we do not assume responsibility for the damage.

-- End of report --