



SAFETY DATA SHEET (SDS)

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SAFETY DATA SHEET

FOR VALEN POWER PTY LTD

17 Cataract Street Lawson NSW 2783 AUSTRALIA

Sealed Maintenance Free Lithium Phosphate Battery

Date: 21 April 2021

Model/Type Reference:

- 3.2 EL 50/3.2 EL 100/3.2 EL 1500/3.2 EL 2200/3.2 EL 3200/6 EL 50/12.8 EL 4.5/12.8 EL 38/12 EL 7/12 EL 9/12 EL 10/12 EL 16/12 EL 21/12 EL 25/12 EL 50/ 12 EL 70/12 ELBP 80/12 EL 100/24 EL 5/24 EL 30/12 EL 50WY/12 EL 50 P/12 EL 75 WY

Product Name:	Valen ENLiFEN
Application of the Substance:	3000Ah maximum
Version Number:	3.0
Revision Date:	Annually; last reviewed April 2021
Company:	Valen Power Pty Ltd
Address:	17 Cataract Street Lawson NSW 2783
Approved by:	Stephen Daries, Technical Director

Section 1

Explanation

The Valen ENLiFEN 'EL' range of Lithium batteries comprise of Lithium Phosphate (LiFePO₄) technology manufactured cells, connected in a format to provide the desired voltage (V) and ampere-hour (Ah) capacity. This assembly has a Battery Management System (BMS) PC board attached and packed into a plastic (ABS) case or metal enclosure.

As a completely assembled and enclosed product, no serious hazards exist when using the product under normally safe electrical procedures. This SDS refers mainly to when the casing and/or the cells are comprised when the casing/s of the cells are damaged and the contents exposed.

Section 2

Composition/Information on Ingredients

Description: This product is a mixture. As for the full description of R-phases, please refer to *Section Regulatory Information*.

INGREDIENTS		
CAS: 25038-59-9 EINECS: 202-510-0	Poly (ethylene terephthalate)	0.2%
CAS: 7782-42-5 EINECS: 231-955-3	Graphite (C), Xi; R36/37	20.44%
CAS: - EINECS: -	Steel	25.06%
CAS: 7440-50-8 EINECS: 231-159-6	Copper Foil (Cu)	9.22%
CAS: 7429-90-5 EINECS: 231-072-3	Aluminium Foil (Al)	4.0%
CAS: 24937-79-9 EINECS: 200-867-7	PVDF	1.04%
CAS: 133-86-4 EINECS: 215-609-9	Conductive Carbon Black	0.62%
CAS: 9004-32-4 EINECS: -	Sodium Carboxymethyl Cellulose	1.1%
CAS: 15365-14-7 EINECS: -	Lithium Iron Phosphate	38.09%
CAS: 9003-07-0 EINECS: --	PP Film	0.23%

Hazards Identification

EMERGENCY OVERVIEW

There are no hazards when used as recommended.

CAUTION! Do not disassemble. Do not expose it to fire or open flame. Do not mix different batteries together. Do not puncture.

- **General:** Under normal conditions of use and handling, there is no physical danger of ignition, explosion or chemical danger of hazardous materials leakage. Hazards may be incurred if the battery is mechanically, thermally or electrically abused.
- **Inhalation:** Under normal conditions of use and handling, no inhalation hazard is present. Like any sealed container, a battery may rupture when exposed to excessive heat and this could result in the release of flammable or corrosive materials which may irritate the respiratory tract.
- **Ingestion:** It is almost impossible to swallow this battery due to its size.
- **Contact with Skin/Eyes:** if heated sufficiently to cause decomposition or rupture, fumes or spilled chemical substances can be irritating to skin/eyes. A short circuit may cause electrothermal damage to the skin.
- **Effects of Overexposure - acute:** no health hazard is anticipated during routine use of this product.
- **Effects of Overexposure - chronic:** not found

EYE CONTACT

- **Eye Contact:** Flush eyes with plenty of cold water for at least 15 minutes. Seek medical attention.
- **Skin Contact:** Remove contaminated clothing. Wash with soap and plenty of water.
- **Inhalation:** If the fumes from thermal decomposition are inhaled, remove them to fresh air.
- **Ingestion:** Do not induce vomiting without professional advice. Seek medical care immediately.

FIRE FIGHTING MEASURES

- **Extinguishing Media:** Use dry chemical powder for a small fire; water spray, or alcohol-resistant foam for a large fire. Do not use a water jet.
- **Special Fire Fighting Procedures:** Structural firefighters must wear a self-contained breathing apparatus and full protective equipment.
- **Unusual Fire and Explosion Hazards:** Fire or high temperatures may cause the battery to vent/explode or leak hazardous vapours/corrosive material. Damaged or opened batteries can result in rapid heating and the release of electrolyte fumes and hazardous vapours.
- **Explosion Sensitivity to Mechanical Impact:** Not applicable.
- **Explosion Sensitivity to State Discharge:** Not applicable.

ACCIDENTAL RELEASE MEASURES

- **Personal Precautions:** Use proper protective equipment as indicated in Section Exposure Controls/Personal Protection. Keep unprotected persons away.
- **Measures for Cleaning/Collection:** if electrolyte spills because of rupture, absorb the spill with inert materials and collect it in a sealed container for proper disposal. Flush the contaminated surface with plenty of water. Do not bring the collected materials close to fire.
- **Additional Information:**
 - See Section Handling and Storage for information on safe handling.
 - See Section Exposure Controls/Personal Protection for information on personal protection equipment.
 - See Section Disposal Considerations for disposal information.

HANDLING AND STORAGE

The regulations relating to storage remises apply to workshops where the product is handled:

- **Handling:**
 - Do not expose the batteries to fire or store near open flame.
 - Do not mix batteries of varying sizes.
 - Do not disassemble or burn batteries.
 - Do not squeeze or pierce batteries.
 - Do not put batteries into water.
 - Keep the batteries in plastic or non-conductive containers, ensuring that terminals do not short or make contact with other metals in the container.
 - Workers must wear proper protective equipment and must operate strictly according to relative rules.
- Information about Fire and Explosion Protection: Keep ignition sources away. Do not smoke in the vicinity.
- Requirements to be met by Storerooms and Receptacles: Do not store near flame or incompatible materials. Keep battery terminals insulated when in storage or transportation. The temperature in the storeroom must be controlled in a proper range. Avoid long-time direct exposure to sunlight.
- Information about storage in one common Storage Facility: Not required
- Further information about storage conditions: None.

EXPOSURE CONTROLS/PERSONAL PROTECTION

- Workplace Exposure Limit:

INGREDIENTS	OSHA PET-TWA	ACGIH TLV-TWA
Lithium Iron Phosphate (CAS: 15365-14-7)	10.0mg/m ³ (as iron fume)	5.0 mg/m ³ (as iron fume)
Graphite (C) (CAS: 7782-42-5)	5.0 mg/m ³ (respirable fraction)	2.0 mg/m ³ (respirable fraction)

- **Engineering Controls:** Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
- **Personal Protective Equipment (for Workers):**
 - **Protection for Hands:** Consider hygiene, recommend wearing gloves.
 - **Protection for Eyes:** No special requirements.
 - **Protection for Respiratory Tract:** Wear suitable respirators when high concentration is present.
 - **Protection for Body:** Wear protective uniforms.
 - **General Protective and Hygienic Measures:** Keep away from food and beverages. Wash hands before breaks and at the end of work. Avoid inhaling dust during processing.
 - **Material of Gloves:** The selection of suitable gloves not only depends on the material but also on quality which will vary from manufacturer to manufacturer.

PHYSICAL AND CHEMICAL PROPERTIES

- **Appearance:** Sealed ABS Plastic case fitted with metallic terminals/connections.
- **Odour:** Odourless
- **Colour:** Black, neon lime green, white, grey
- **pH:** Not available
- **Solubility in/with Water:** Not soluble
- **Melting point/Melting range:** Not available
- **Boiling point/Boiling range:** Not available

STABILITY AND REACTIVITY

- **Chemical Stability:** Stable under normal temperatures and pressure.
- **Decomposition Products:** Fire or high temperatures may cause the battery to vent/or explode or leak hazardous vapours or corrosive material. Damaged or opened batteries can result in rapid heating and the release of hazardous vapours or corrosive materials.
- **Materials to avoid:** Fire, open flame, water and acids.
- **Hazardous Polymerisations:** Will not occur.
- **Conditions to avoid:** Avoid exposure or contact to extreme temperatures.

TOXICOLOGICAL INFORMATION

- **Product Toxicity Data:** There is no available data for the product itself. The information below applied if the internal chemicals are exposed, the internal materials are as follows:
 - **Irritation:** The electrolyte contained in the battery is irritating to the eyes. Prolonged contact with skin may cause irritation.
 - **Sensitivity:** Not found
 - **Teratogenicity:** Not found
 - **Mutagenicity:** Not found.
 - **Additional Toxicological Information:** No classification data on carcinogenic properties of this material is available from EPA, IARC, NTP, OSHA or ACGIH.

ECOLOGICAL INFORMATION

- **Ecological Effect:** There are no hazards present under normal use and handling.
- **Additional Ecological Information:**
 - AOX Indication: This product does not contain organically bonded halogen compounds.
 - Effect of Material on Aquatic Life: DO NOT allow this product to go into aquatic life; it will harm aquatic life as the chemical substances may spill because of rupture.
- **General Notes:**
 - Do not allow products to reach groundwater, watercourse or sewerage systems.
 - Danger to drinking water if even quantities leak into the ground.
- Do not allow material to be released to the environment without proper governmental permits.

DISPOSAL CONSIDERATIONS

- **Recommendations:**
 - Must not be disposed of with household garbage.
 - Do not dispose into the sewage system.
 - Lithium batteries are fully recyclable. Speak to your nearest recycling depot when disposing of spent batteries.
 - Batteries should be discharged fully prior to disposal.
 - The battery terminals should be capped to prevent a short circuit.
 - Disposal must be made according to local regulations.

TRANSPORT INFORMATION

- **US DOT (per 49 CFR 172.101) and IATA/ICAO:**
 - **Proper Shipping Name:** Lithium Phosphate Batteries packed with Equipment
 - **UN Number:** UN3481 - UN3481 for Lithium Batteries contained in equipment (including Lithium Phosphate batteries) or Lithium Batteries packed with Equipment (including Lithium Phosphate batteries).
 - **Hazard Classification:** Class 9
 - **Shipping Requirements:**
 - **DOT:** Lithium batteries and cells are subject to shipping requirements expectations under 49 CFR 173.185.
 - **IATA:** This product is not classified as dangerous under the current 62nd (2021) edition of the IATA-DGR and the packing is in accordance with Section 11 packing requirements (PI 966).
- We further hereby certify that consignments have already been certified in UN38.3 Test in accordance with IATA-DGR.**

REGULATORY INFORMATION

- **DSCL (EEC):** This product is not classified according to the EU regulations.
- **TSCA:** All components of this product comply with the inventory listing requirements of the U.S. Toxic Substances Control Act Chemical Substance Inventory.
- **NFPA Ratings (Scale 0-4):**



Health = 1; Fire = 1; Reactivity = 1

HMIS Ratings (Scale 0-4):

Health					1
Flammability					1
Reactivity					0
Hazard Rating:					
Least	Slight	Moderate	High	Extreme	
0	1	2	3	4	

- **Risk Phrases:**
 - Ethylene Carbonate: R41: Risk of serious damage to the eyes
 - Graphite (C): R36/37: Irritating to eyes and respiratory system
- **Safety Phrases:**
 - S2: Store in a safe place out of reach of children
 - S17: Store away from combustible material
 - S59: Refer to manufacturer/supplier for information on recovery/recycling

OTHER INFORMATION

DISCLAIMER: Employers should use this information only as a supplement to other information gathered by them and should make an independent judgement of the suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Full Description of some Acronyms:

- CAS:** Chemical Abstracts Service
- EINECS:** European Inventory of Existing Commercial Chemical Substances
- DOT:** Department of Transportation
- IATA:** International Air Transport Association
- ICAO:** International Civil Aviation Organisation
- TSCA:** Toxic Substance Control Act

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