

SECTION 1A: PRODUCT IDENTIFICATION

PRODUCT NAME: Valve Regulated Lead Acid OPzV Battery
OTHER NAMES: Enirgi Advance OPzV Range
PRODUCT TYPE: Battery, Wet, Non-Spillable, Electric Storage
USAGE: Telecom systems / Monitoring and control systems at power plants and energy stations / Signaling systems at railway stations, airports and seaports / Emergency lighting systems / Data processing systems / Uninterruptible power supply systems (UPS) / Renewable energy systems (solar, wind and hydro-electric) / Automation systems / Military Applications

SECTION 1B: PRODUCT SUPPLIER DETAIL

SUPPLIER : Enirgi Power Storage
A.B.N. : 91 002 915 326
ADDRESS : Street : Level 1, Building 10
658 Church Street
Richmond VIC 3121
Australia

TELEPHONE: 1300 783 879

EMERGENCY TELEPHONE NUMBER: 1300 783 879

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SECTION 2: HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Caution, do not open or disassemble. Do not expose to fire or open flame. Do not mix with batteries of varying sizes, chemistries or types. Do not puncture, deform incinerate or heat above 100°C.

POTENTIAL HEALTH EFFECTS: In the event of contact with internal components if battery is broken or opened, then persons with the following medical conditions must take precautions: pulmonary edema, bronchitis, emphysema, dental erosion and trachea bronchitis.

ACUTE EXPOSURE: Do not open battery. Avoid contact with internal components. Internal components include lead and gel electrolyte. Contact with gel electrolyte may cause skin irritation and chemical burns. Gel electrolyte causes severe irritation and burns of eyes, nose and throat. Ingestion can cause severe burns and vomiting.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient	% by Weigh	CAS No	Classification	
			Symbols	Risk & Safety
Lead		7439-92-1	n/a	
Lead Dioxide	53 - 74	1309-60-0	 	T; N Symbols R: 61-20/22-33-62-50/53 S: 53-45-60-61
Antimony	< 0.001	7440-36-0	 	Xn; N Symbols R: 20/22;51/53 S: 61
Calcium	< 1	7440-70-2		F Symbol R: 15 S: 2-8-24/25-43
Arsenic	< 1	7440-38-2	 	T; N Symbols R: 23/25-50/53 S: (1/2-)20/21-28-45-60-61
Tin	< 1	7440-31-5		R: 20/22 S: 22-23-20/21-36/37
Acrylonitrile Butadiene Styrene (ABS)	5 - 15	9003-56-9		T Symbol R: 45-20/21/22 S: 53-28A-37-45
Electrolyte (Sulfuric Acid)	20 - 30	7664-93-9		C Symbol R: 35 S: (1/2-)26-30-45
Silicon dioxide	1 - 2	7631-86-9		Xi Symbol R: 36/37 S: 26-37/39

SECTION 4: FIRST AID MEASURES

EYES: Sulfuric acid - Flush eyes with large amounts of cool water for at least 15 minutes. Seek immediate medical attention.
Lead Compounds – Flush eyes with large amounts of cool water for at least 15 minutes. Seek immediate medical attention.

SKIN: Flush affected area(s) with large amounts of water using deluge emergency shower, if available, and shower for at least 15 minutes. Remove contaminated clothing. If symptoms persist, seek medical attention.

INGESTION: Sulfuric acid - If swallowed, give large amounts of water or milk, then consult a medical practitioner.
Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death.
Lead Compounds – Seek immediate medical attention.

INHALATION: Sulfuric acid - If breathing difficulties develop, remove person to fresh air.
Seek medical assistance if symptoms persist.
Lead Compounds – Remove from exposure; gargle, wash nose and eyes and seek medical attention.

SECTION 5: FIRE-FIGHTING MEASURES

FLASH POINT: NOT APPLICABLE

FLAMMABLE LIMITS: 4% (Hydrogen Gas)

EXTINGUISHING MEDIA: Dry chemical, carbon dioxide foam, CO₂. Do not use water on live electrical circuits.

SPECIAL FIREFIGHTING PROCEDURES & PROTECTIVE EQUIPMENT: If batteries are on charge, switch off power. Use appropriate media for surrounding the fire. Do not use carbon dioxide directly on cells/containers due to the possibility of thermal shock causing cracking and possible electrolyte leaking. Avoid breathing vapours. Use full protective equipment (bunker gear) and self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Sulfuric acid vapors are generated during overcharge and polycarbonate container or lid failure. Use adequate ventilation. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries.

SPECIFIC HAZARDS IN CASE OF FIRE: Thermal shock may cause battery container or lid to crack open. Containers may explode when heated.

ADDITIONAL INFORMATION: Firefighting water runoff and dilution water may be toxic and corrosive and may cause adverse environmental impacts.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: Avoid contact with any spilled material. Contain spill, isolate hazard area, and deny entry. Limit site access to emergency responders. Neutralize with sodium bicarbonate, soda ash, lime or other neutralizing agent.

FILE NO.: Sunlight Lead Acid battery (Tubular gel)

ENVIRONMENTAL PRECAUTIONS: Prevent spilled material from entering sewers and waterways. Place batteries in suitable containers for disposal in an ISO14001 certified facility and in compliance with the applicable local, state and federal regulations

SPILL CONTAINMENT & CLEANUP METHODS/MATERIALS: Add neutralizer/absorbent to spill area. Sweep or shovel spilled material and absorbent and place in an approved container. Dispose of any non- recyclable materials in accordance with local, state or federal regulations.

TREAT AS HAZARDOUS WASTE

ADDITIONAL INFORMATION: Lead acid batteries and their plastic lids and containers are recyclable.

SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING AND STORAGE:

- Do not place anything on the battery tops.
- Do not cover batteries with aluminium coated sarking.
- If battery container or lid is broken, avoid contact with internal components.
- Do not handle near heat, sparks, or open flames.
- Protect containers from physical damage to avoid leaks and spills.
- Do not open vent caps of VRLA cells and batteries.
- Do not allow conductive material to touch the battery terminals. A dangerous short-circuit may occur and cause battery failure and fire.

OTHER PRECAUTIONS

Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water.

Good personal hygiene and work practices are mandatory. Refrain from eating, drinking and smoking in work areas, and thoroughly wash hands, face, neck and arms before eating or drinking. Launder soiled clothes before reuse.

PERSONAL PRECAUTIONS

Wear protective clothing, safety footwear, and safety glasses with side shields. Face shield and acid resistant apron are recommended.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS: Store, handle and charge in a well ventilated area.

WORK PRACTICES: Handle batteries cautiously to avoid breakage and spills. Keep vent caps on securely. Avoid contact with internal components. Wear protective clothing when handling batteries.

FILE NO.: Sunlight Lead Acid battery (Tubular gel)

PERSONAL PROTECTIVE CLOTHING: None required during normal use. Protective clothing should be selected and worn specifically for the workplace, depending on the quantity and nature of the hazardous substances handled.

RESPIRATORY PROTECTION: Not required for normal conditions of use. If an overcharge or overheating condition (or when fire-fighting) and the concentration of acid fumes is known or suspected to exceed the exposure limit, wear self contained breathing apparatus and a full face shield piece operated in a positive pressure mode. See also special firefighting procedures (Section 6).

EYE PROTECTION: Wear chemical protective glasses with side shields, or goggles with a full face shield.

SKIN PROTECTION: Wear chemical resistant gloves with elbow length gauntlet to prevent skin contact.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Acid resistant apron. Under severe exposure or emergency conditions, wear acid resistant clothing and foot wear.

SAFE WORK PRACTICES: Do not wear metallic jewelry, watches or rings when working on batteries. Maintain an eye wash, fire extinguisher and emergency communication device on the work area.

EXPOSURE GUIDELINES & LIMITS:

- Lead, inorganic (as Pb) 0.05 mg/m³
- Sulfuric acid 1.00 mg/m³
- Antimony 0.50 mg/m³
- Arsenic 0.05 mg/m³

Refer to Safe Work Australia <http://hsis.ascc.gov.au/SearchES.aspx>

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Industrial/commercial lead acid battery as supplied.

ODOUR: Odourless

PHYSICAL STATE: Sulfuric acid: Liquid; specific gravity 1.240 – 1.300; pH < 1; Lead: 11.34.

BOILING POINT: Sulfuric acid: 113-116°C; Lead 1070°C

MELTING POINT: Sulfuric acid: Liquid; Lead: 327°C

VAPOUR PRESSURE: 10 mmHg

VAPOUR DENSITY (AIR = 1): > 1

EVAPORATION RATE (n-BuAc=1): < 1

SOLUBILITY IN WATER: Sulfuric acid 100%

FLASH POINT: Below room temperature (as hydrogen gas)

LOWER EXPLOSIVE LIMIT (LEL): 4% (as hydrogen gas)

UPPER EXPLOSIVE LIMIT (UEL): 74% (as hydrogen gas)

FLAMMABILITY/HMIS HAZARD CLASSIFICATIONS (US/CN/EU): As sulfuric acid

SECTION 10: STABILITY AND REACTIVITY

STABILITY: This product is stable under normal conditions at ambient temperature.

INCOMPATIBILITY (MATERIAL TO AVOID): Strong bases, combustible organic materials, reducing agents, finely divided metals, strong oxidizers, and water.

HAZARDOUS DECOMPOSITION BYPRODUCTS: Thermal decomposition will produce sulphur dioxide, sulphur trioxide, carbon monoxide, Sulfuric acid mist, and hydrogen. Temperatures above the melting point are likely to produce toxic acid fumes, vapor or contact with strong acid or base, or the presence of nascent hydrogen may generate highly toxic gas.

HAZARDOUS POLYMERIZATION: Will not occur. Product is stable under normal conditions.

CONDITIONS TO AVOID: Overcharging, sparks and other sources of ignition, prolonged overheating, deformation, crushing, piercing or disassembly.

SECTION 11: TOXICOLOGICAL INFORMATION

SIGNS AND SYMPTOMS: None unless if battery ruptures. In the event of exposure to internal contents, acid fumes may be very irritating to the eyes and skin.

ACUTE TOXICITY (Test Results Basis and Comments):

Sulfuric acid: LD50, Rat: 2140 mg/kg; LC50, Guinea pig: 510 mg/m³

Lead: No data available for elemental lead

SUBCHRONIC/CHRONIC TOXICITY (Test Results and Comments):

Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

Additional Information

- Very little chronic toxicity data available for elemental lead.
- Lead is listed by IARC as a 2B carcinogen: possible carcinogen in humans. Arsenic is listed by IARC, ACGIH, and NTP as a carcinogen, based on studies with high doses over long periods of time. The other ingredients in this product, present at equal to, or greater than 0,1% of the product, are not listed by OSHA, NTP, or IARC as suspect carcinogens.
- The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.
- The international agency for research on cancer (IARC) has classified "strong inorganic acid mist containing Sulfuric acid" as a category carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of Sulfuric acid or Sulfuric acid solutions contained within a battery. Inorganic acid mist (Sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may however

result in the generation of Sulfuric acid mist.

SECTION 12: ECOLOGICAL INFORMATION

PERSISTENCE & DEGRADABILITY: Lead is highly persistent in soils and sediments. There is no data available on biodegradation.

BIOACCUMULATIVE POTENTIAL (Including Mobility): Mobility of metallic lead between ecological compartments is low. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants, but very little bioaccumulation occurs through the food chain. Most studies have included lead compounds, not solid inorganic lead.

AQUATIC TOXICITY (Test Results & Comments):

Sulfuric acid: 24-hour LC50, fresh water fish (Brachydanio rerio): 82 mg/l 96-hour LOEC, fresh water fish (Cyprinus carpio): 22 mg/l

Lead (metal): No data available. In most surface water and groundwater, lead forms compounds with anions such as hydroxides, carbonates, sulfates, and phosphates, and precipitates out of the water column. Lead may occur as absorbed ions or surface coatings on sediment mineral particles or may be carried in colloidal particles in surface water. Most lead is strongly retained in soil, resulting in little mobility. Lead may be immobilized by ion exchange with hydrous oxides or clays or by chelation with humic or fulvic acids in the soil. Lead (dissolved phase) is bio accumulated by plants and animals, both aquatic and terrestrial.

Additional Information

- No known effects on stratospheric ozone depletion.
- Volatile organic compounds: 0% (by Volume)
- Water Endangering Class (WGK): Not Applicable

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

Lead acid battery: Dispose of as hazardous waste to an ISO14001 certified lead recycler. If battery is leaking, place battery in a heavy-duty plastic bag. Wear acid resistant boots, faceshield, acid resistant apron, and acid resistant gloves.

Sulfuric acid: Dispose off as a hazardous waste to an ISO14001 facility. If uncertain, call the Enirgi Power Storage representative. **DO NOT FLUSH LEAD CONTAMINATED ACID TO SEWER.**

RCRA HAZARD CLASS: D001 and D008

SECTION 14: TRANSPORT INFORMATION

Per DOT, ADR/RID, IATA, ICAO and IMDG rules and regulations, SUNLIGHT OPzV Lead Acid batteries are exempt from hazardous classifications as a result of successful completion of the following tests:

- 1) vibration tests;

- 2) pressure differential tests;
- 3) case rupturing tests (no free liquids).

The batteries must be shipped in a condition that would protect from short circuits, and be securely packaged so as to withstand conditions normal to transportation

UN No:

Proper shipping name: "NOT RESTRICTED"

Class : Exempted from the requirements because batteries have passed the
Packing Group: Vibration and Pressure Differential performance tests for Non-spillable
Label: designation.

Transport : The Australian Dangerous Goods Code Special Provision SP238 and Special Provision A67 of the International Air Transport Association (IATA) Dangerous Goods Regulations, allows Enirig Power Storage to transport certain non-spillable batteries as non-dangerous goods by road, rail and air. They are exempt provided they are properly packed for transport and the terminals are protected from short circuit. Contact Enirig Power Storage for more information.

SECTION 15: REGULATORY INFORMATION

Poison Schedule Number: S6 under "Standard for Uniform Scheduling of Drugs and Poison"

RISK PHRASES

- 61 May cause harm to the unborn child
- 20/22 Harmful by inhalation if swallowed
- 33 Danger of cumulative effects
- 62 Possible risk of impaired fertility
- 50/53 Very toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment.
- 51/53 Toxic to aquatic organisms, may cause long term adverse effects in the aquatic environment
- 15 Contact with water liberates extremely flammable gasses.
- 23/25 Toxic by inhalation and if swallowed.
- 35 Causes severe burns.
- 36/37 Irritating to eyes and respiratory system.

SAFETY PHRASES

- 53 Avoid exposure – obtain special instructions before use

- 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
- 60 This material and its container must be disposed of as hazardous waste.

- 61 Avoid release to the environment. Refer to special instructions/safety data sheets.

- 2 Keep out of the reach of children.
- 8 Keep out of the container dry.
- 24/25 Avoid contact with skin and eyes
- 43 In case of fire, use ...(section 5)
- 1 / 2 Keep locked up and out of the reach of children.
- 20/21 When using do not eat, drink or smoke
- 28 After contact with skin, wash immediately with plenty of (section 4)
- 60 This material and its container must be disposed of as hazardous waste.
- 61 Avoid release to the environment. Refer to special instructions/safety data sheets.
- 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- 30 Never add water to this project.
- 37/39 Wear suitable gloves and eye/face protection
- 22 Do not breathe dust
- 23 Do not breathe gas/fumes/vapour/spray (appropriate wording to be specified by the manufacturer).
- 20 When using do not eat or drink.
- 36/37 Wear suitable protective clothing and gloves.

SECTION 16: OTHER INFORMATION

This MSDS is offered for information only. This information is based on data considered to be accurate, however, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein.

This information relates to the specific materials designated and may not be valid for such material used in combination with other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his particular use.

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