



Safety Data Sheet

Non-spillable AGM VRLA Batteries

1. IDENTIFICATION

Product Identifier

Product Name Non-spillable AGM VRLA Battery
Applies to LEOCH products: DJW, DJM, DJ, FT, LP, LPC, LPL, LPF, LPX, LPS, XP, XPE, XVP, PLH, PLC, PLX

Other means of Identification

UN Id No UN2800
Synonyms Valve-regulated lead-acid (VRLA) battery, AGM Battery;
Sealed lead-acid (SLA) battery; Non-spillable battery
Recommended use Electric storage battery

Recommended use

Supplier of the safety data sheet

Name: LEOCH BATTERY Pte. Ltd. (Australia)
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Smithfield. NSW 2164.
Australia

Electronic:
Telephone: Australia: +61 2 9756 0950
China: +86 775 8603 6060

Emergency telephone number

Company: Australia: +61 2 9756 0950
24 hr Emergency Services: Australia: In Australia, dial '000'

2. HAZARD(S) IDENTIFICATION

Emergency overview

Material is an article. No chemical exposure health risks are expected related to the use of the product as sold and used in accordance with the manufacturer's instructions for installation, operation and service.

Exposure to hazardous chemical materials can occur only when the article is abnormally and sufficiently heated, oxidized or otherwise processed to create dust, vapor or fumes, or when the article is physically damaged or otherwise opened to allow access to, and contact with, internal components.

Article is a device which stores electrical energy. Electrical hazards such as sparks and short-circuits arise in the use of the product. In normal operation, article may generate and release small quantities of flammable hydrogen gas. Abnormal electrical overcharging of the battery may result in excessive heat and the production of significant amounts hydrogen gas. It must always be assumed that a burning cigarette, naked flame or spark may cause any hydrogen gas in the article to explode, resulting in the dispersion of casing fragments and corrosive liquid electrolyte.

Hazard Statements

Classification	Cat	Hazard Statements
<u>Health</u>		
Acute Toxicity	4	Harmful if swallowed, inhaled or in contact with skin
Skin Corrosion/Irritation	1	Contact with internal components may cause irritation or severe burns.
Eye Damage/irritation	1A	Causes skin irritation, serious eye damage.
Carcinogenicity (lead)	1A	May cause cancer if ingested or inhaled.
Reproductive Toxicity	1A	May damage fertility or the unborn child if ingested or inhaled
Specific target organ toxicity	2	Prolonged or repeated exposure may damage organs
<u>Physical</u>		
Flammable Gas	1	Extremely flammable gas (hydrogen) In use, may form flammable/explosive vapor-air mixture. Explosive, fire, blast or projection hazard.
<u>Environment</u>		
Aquatic Acute & Chronic	1	Very toxic to aquatic life with long lasting effects.



Signal Word: Danger

Precautionary Statements - Prevention

- Do not eat, drink or smoke when using this product
- Use personal protective equipment as required
- Wash thoroughly after handling
- Avoid breathing dust/gas/mist/vapor/spray
- Avoid contact with internal components
- Use only in well-ventilated areas
- Do not eat, drink or smoke when using this product

Precautionary Statements - Response

- If swallowed, DO NOT induce vomiting. Rinse mouth repeatedly
- If in eyes, rinse cautiously with clean water for several minutes
- If on skin, in hair, or on clothes, remove affected clothes and rinse affected areas of the body with water/shower. Wash affected clothing before reuse.
- If inhaled, relocate to fresh air area and keep in a position comfortable for breathing
- Call a Poison Centre or a doctor/physician if feeling unwell

Precautionary Statements - Storage

- Store in locked, well-ventilated area

Keep away from heat/sparks/open flame/hot surfaces

Precautionary Statements - Disposal

Dispose of product through approved waste disposal methods

Avoid release into the environment

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS Number	Weight - %
Inorganic Lead	7439-92-1	60-75
Dilute sulfuric acid	7664-93-9	20-25
Acrylonitrile Butadiene Styrene (ABS)	9003-56-9	5-10
Other material (non-hazardous)	-	< 5

4. FIRSTAID MEASURES

First Aid

First aid is not expected if product is used under normal operating conditions and as per manufacturer's instructions.

General advice

Remove from exposure. Immediately call a poison centre or doctor/physician if unwell or concerned about exposure, and provide this SDS to medical personnel.

Eye contact

Rinse eyes cautiously with water for several minutes. Remove contact lenses if present and easy to do. Use eye wash equipment if available

Skin or hair contact

Remove affected clothing. Thoroughly wash affected area with soap and water. Use safety shower if available.

Inhalation

Re-locate to fresh air area and keep at rest in a position comfortable for breathing

Ingestion

Rinse mouth. Do NOT induce vomiting. Seek medical attention immediately

Most important symptoms and effects

Symptoms

Lead toxicity in the body accumulates over time. Lead absorption may cause nausea, weight loss, and arm and leg joint pains. Lead toxicity includes headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness

Acute exposure to Sulfuric Acid causes severe irritation, burns and permanent tissue damage to all routes of exposure. Chronic exposure to Sulfuric Acid may also cause inflammation of the nose, throat and respiratory system.

Advice to physicians

Treat symptomatically

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing media

CO2, dry chemical or foam

Unsuitable Extinguishing media

Water. Void using water on a fire burning battery product

Specific Hazards**Hazardous combustion products**

Lead components of battery may produce toxic metal fume, vapor or dust. In high temperature conditions, contact with strong acid or base or in the presence of hydrogen gas, highly toxic arsine gas may be produced

Sulfuric acid component of battery may produce hazardous gases such as sulfuric acid mist, sulfur trioxide, carbon monoxide, sulfur dioxide and hydrogen sulfide.

Combustion of ABS in high temperatures (>400°C) may produce hazardous organic gases such as butadiene and acrylonitrile

Protective equipment and precautions for firefighters

Wear positive pressure self-contained breathing apparatus.

Wear protective clothing impervious to sulfuric acid.

Disconnect any electrical circuit to battery.

Do not short battery terminals with fire-fighting equipment.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures**Personal precautions**

Use protective equipment as per manufacturer's recommendations. Avoid skin contact with lead. Avoid skin contact with any internal component of the battery.

For emergency responders

There is no release of material unless the battery case is damaged. If release occurs, stop flow of material and contain or absorb spill material with earth, dry sand or vermiculite. Do not use combustible material as absorbing material. Neutralise spill material with water-soluble alkaline material such as soda ash, sodium bicarbonate, or lime. Place damaged battery inside heavy-duty plastic bag. Dispose of as hazardous waste. Use acid-resistant protective clothing, boots, gloves, and face shield.

Environmental precautions

Prevent leakage material entry into waterways, sewers, basements or confined areas. Run-off from fire control and dilution water maybe toxic and corrosive and may cause adverse environmental impacts.

Disposal

Damaged and spent batteries should be sent to a battery re-cycler. Follow applicable local regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Handle battery devices cautiously. Follow manufacturer's instructions.

Do not allow conductive material to touch battery terminals

Conditions for safe storage, including incompatibilities**Storage conditions**

Storage Class 8B: Non-flammable corrosive materials.

Store in a cool temperature, well-ventilated, undercover area.

Store batteries on a hard impervious surface and use cardboard or a similar non-conductor between stacked levels of batteries to prevent short-circuits.

Incompatible materials

Lead compounds: Avoid contact with strong inorganic acids and bases, combustible organic materials, halide, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, reducing agents.

Sulfuric acid: Avoid contact with other metals, strong reducing agents, strong oxidizers, organic materials, and water.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredient	TWA Air Exposure limit (ug/m ³)		
	ACGIH TLV	OSHA PEL	NIOSH REL
Lead power	50	50	50
Sulfuric Acid	200	1000	1000
ABS	No data	No data	No data

Appropriate Controls

Engineering Control

Site-specific risk assessments should be conducted to determine appropriate exposure control measures. Good ventilation should be used to ensure airborne hazards are maintained below threshold limits. Ventilation in accordance with AS4029 & AS3015 in relation to hydrogen gas shall apply. If mechanical ventilation is used, components must be acid resistant.

Work practices

Handle batteries cautiously to avoid damaging the case. Avoid contact with internal components. Do not allow metallic articles to contact the battery terminals during handling.

Personal protection equipment (PPE)

None needed under normal conditions. If battery is damaged, the following protection measures are recommended.

Eye/face protection

Use chemical goggles or face shield

Skin protection

Use rubber or plastic acid-resistant gloves with elbow-length gauntlet.

Other protection

Use acid-resistant apron to protect clothing and other parts of the body if warranted. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots. In areas where sulfuric acid is handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

Respiratory protection

When concentrations of sulfuric acid mist or airborne lead are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

General Hygiene Considerations

Observe good personal hygiene measures. Always wash with soap and water after handling batteries and before eating, drinking or smoking. Routinely wash work clothing and protective equipment to remove contaminants

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance: Lead acid battery (a manufactured article)

Odor: No characteristic odor

Color: No particular characteristic color

This product is a manufactured article for which the overall physicochemical data are not determined. The properties of the most relevant ingredients are:-

Property	Ingredients				
	Lead (powder)	Lead dioxide	Lead sulfate	Electrolyte (dilute Sulfuric Acid)	ABS
State	solid	solid	solid	liquid	solid
Appearance	Metal & powder	powder	powder	Clear	plastic
colour	Silver-gray	Dark brown powder	White crystals	Colorless	Not determined
Melting point (°C)	327				130-160
Boiling point (°C)		290	1170	95 - 115	
Solubility (in H ₂ O)	none	none	40mg/l (15°C)	100%	none
pH	-	-	-	< 1	-
Density (g/m ³)	11.34	9.20	6.20	~1.3	1.05 -1.06

10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions

Chemical Stability

Stable under recommend storage conditions

Possibility of Hazardous Reactions

Normal conditions

None

Abnormal conditions

Significant amounts of hydrogen gas can be generated in the battery and emitted from the battery if the battery is electrically overcharged.

Hazardous polymerization

Hazardous polymerization does not occur

Conditions to avoid

Electrical over-charging

Sparks or other sources of ignition in battery area.

Incompatible Material

Lead compounds:

Avoid contact with strong inorganic acids and bases, combustible organic materials, halide, halogenated, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents.

Sulfuric Acid:

Avoid contact with other metals, strong reducing agents, strong oxidizers, organic materials, and water

Hazardous Decomposition Products**Sulfuric Acid:**

Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen sulfide. Sulfuric acid Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Lead Compounds:

High temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust. Contact with strong acid, or alkaline in the presence of nascent hydrogen may generate highly toxic arsine gas.

11. TOXICOLOGICAL INFORMATION

Information on possible routes of exposure**Product Information**

No data

Major ingredients Routes of Exposure

Lead compounds:	Harmful by ingestion and inhalation of dust particles, vapor or fumes
Sulfuric Acid	Harmful by all routes of entry
ABS:	no data

Ingestion:

Lead Compounds:	May cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping
Sulfuric Acid:	May cause severe irritation of the mouth, throat, esophagus, and stomach
ABS:	No data

Skin Contact:

Lead Compounds:	Not absorbed through the skin
Sulfuric Acid:	Severe irritation, burns and ulceration
ABS:	Not absorbed through the skin

Eye Contact

Lead Compounds	Dust, vapor or fume may cause irritation.
Sulfuric Acid:	Severe irritation, burns, cornea damage, or blindness
ABS:	Dust, vapor or fume may cause irritation.

Inhalation:

Lead Compounds	Dust, fumes or vapor may cause irritation of upper respiratory tract or lungs.
Sulfuric Acid:	Acid vapors and mist may cause severe respiratory problems
ABS	No data

Immediate, delayed and chronic health effects form exposure**Acute Health Hazards**

- Sulfuric Acid: Severe skin irritation, burns, damage to cornea may cause blindness, upper respiratory irritation.
- Lead Compounds: May cause abdominal pain, nausea, headaches, vomiting, loss of appetite, severe cramping, muscular aches and weakness, and difficulty sleeping.

Chronic Health Hazards

- Sulfuric acid: Possible scarring of the cornea, inflammation of the nose, throat and bronchial tubes, possible erosion of tooth enamel.
- Lead Compounds: The toxic effects of lead are cumulative and slow to appear. May cause anemia, damage to kidneys and nervous system, and damage to reproductive system in both males and females.

Medical Conditions Generally Aggravated by Exposure

- Sulfuric Acid: Contact of battery electrolyte with the skin may aggravate skin diseases such as eczema and contact dermatitis. Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions.
- Lead compounds: May aggravate chronic forms of kidney, liver, and neurological diseases.

Exposure level Information

Ingredient	Acute toxicity levels	
	Oral LD ₅₀ mg/kg	Inhalation LC ₅₀ mg/m ³
Elemental lead:	500 (rat)	4500ppm
Sulfuric acid	2140 (rat)	510 (2h) guinea pig 375 (2h) rat

Information on Toxicological effects

- acute toxicity** not available
- skin corrosion/irritation** not available
- serious eye damage/irritation** not available
- respiratory or skin sensitization** not available
- germ cell mutagenicity** not available

carcinogenicity

Sulfuric Acid:

The National Toxicological Program (NTP) and The International Agency for Research on Cancer (IARC) have classified strong inorganic acid mist containing sulfuric acid as a Category 1 carcinogen, a substance that is carcinogenic to humans. The ACGIH has classified strong inorganic acid mist containing sulfuric acid as an A2 carcinogen (suspected human carcinogen). These classifications do 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 result in the generation of sulfuric acid mist.

Lead Compounds:

Human studies are inconclusive regarding lead exposure and an increased cancer risk. The EPA and the International Agency for Research on Cancer (IARC) have categorized lead and inorganic lead compounds as a B2 classification (probable/possible human carcinogen) based on sufficient animal evidence and inadequate human evidence.

- reproductive toxicity** not available

specific Target Organ Toxicity (STOT) – single exposure not available

specific Target Organ Toxicity (STOT) – repeated exposure

Lead Compounds:

Lead is a cumulative poison. Increasing amounts of lead can build up in the body and may reach a point where symptoms and disabilities occur. Continuous exposure may result in decreased fertility. Lead is a teratogen. Overexposure of lead by either parent before pregnancy may increase the chances of miscarriage or birth defects.

Target Organ Effects:

Inorganic lead compounds have been documented in observational human studies to produce toxicity in multiple organ systems and body function including the haemotopoetic (blood) system, kidney function, reproductive function and the central nervous system. Postnatal exposure to lead compounds is associated with impacts on neurobehavioral development in children.

aspiration hazard There is a no aspiration hazard

12. ECOLOGICAL INFORMATION

Ecotoxicity

Very toxic to aquatic life with long-lasting effects

Chemical	Fish	Crustacea
Powered Lead	500: 96 h Brachydanio rerio mg/L LC ₅₀ static	600: 48 h water flea µg/L EC ₅₀
	0.44: 96 h Cyprinus carpio mg/L LC ₅₀ semi-static	
	1.17: 96 h Oncorhynchus mykiss mg/L LC ₅₀ flow-through	
	1.32: 96 h Oncorhynchus mykiss mg/L LC ₅₀ static	
Sulfuric acid	No data	29: 24 h Daphnia magna mg/L EC ₅₀

Persistence and Degradability

Lead is persistent in soils and sediments.

Bioaccumulative potential

No data

Mobility in soil

No data

13. DISPOSAL CONSIDERATION

Waste treatment Methods

Disposal of Wastes

Disposal should be in accordance with applicable state or federal regulations

Contaminated packaging or parts

Disposal should be in accordance with applicable state or federal regulations

14. TRANSPORT INFORMATION

UN Number 2800
Proper Shipping Name NONSPILLABLE BATTERY

Australian Dangerous Goods (ADG) Code

Transport Hazard class Class 8
Packing Group III
Hazchem Code 2X

Transport (Dangerous Goods)

Dangerous Goods transport codes,
Australian Dangerous Goods Code Special Provision SP238, and
IATA Dangerous Goods Regulation Special Provision A67, and
IMO-IMDG Code Special Provision 238.1 and 238.2,
exempt the batteries covered by this SDS from being transported by road, rail, air and sea
as dangerous goods provided:-

- (i) the batteries are properly packed for transport,
- (ii) the battery terminals are protected from short-circuit.

The batteries and the outer packaging must be clearly and durably labeled "NON-SPILLABLE" or "NON-SPILLABLE BATTERY".

15. REGULATORY INFORMATION

TSCA (USA)

Ingredients in the article(s) covered by the SDS are listed in the TSCA registry as follows:

Ingredient	CAS number	TSCA status
Inorganic lead (Pb)	7439-92-1	listed
Lead Oxide (PbO)	1317-36-8	listed
Lead Sulfate (PbSO ₄)	7446-14-2	listed

16. OTHER INFORMATION

SDS Preparation

Date of Issue: 1 Jan 2017
Review before: 1 Jan 2021

DISCLAIMER:

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