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

**Supplier of the safety data sheet**

**Name:** LEOCH BATTERY Pte. Ltd. (Australia)

**Address:** 2 / 29 Tarlington place, 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

<table>
<thead>
<tr>
<th>Cat</th>
<th>Hazard Statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td></td>
</tr>
<tr>
<td>Acute Toxicity</td>
<td>4</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>1</td>
</tr>
<tr>
<td>Eye Damage/Irritation</td>
<td>1A</td>
</tr>
<tr>
<td>Carcinogenicity (lead)</td>
<td>1A</td>
</tr>
<tr>
<td>Reproductive Toxicity</td>
<td>1A</td>
</tr>
<tr>
<td>Specific target organ toxicity</td>
<td>2</td>
</tr>
<tr>
<td>Physical</td>
<td></td>
</tr>
<tr>
<td>Flammable Gas</td>
<td>1</td>
</tr>
<tr>
<td>Environment</td>
<td></td>
</tr>
<tr>
<td>Aquatic Acute &amp; Chronic</td>
<td>1</td>
</tr>
</tbody>
</table>

### 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 way 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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Number</th>
<th>Weight - %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic Lead</td>
<td>7439-92-1</td>
<td>60-75</td>
</tr>
<tr>
<td>Dilute sulfuric acid</td>
<td>7664-93-9</td>
<td>20-25</td>
</tr>
<tr>
<td>Acrylonitrile Butadiene Styrene (ABS)</td>
<td>9003-56-9</td>
<td>5-10</td>
</tr>
<tr>
<td>Other material (non-hazardous)</td>
<td>-</td>
<td>&lt; 5</td>
</tr>
</tbody>
</table>

### 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 of 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 cid 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

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>TWA Air Exposure limit (µg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACGIH TLV</td>
</tr>
<tr>
<td>Lead power</td>
<td>50</td>
</tr>
<tr>
<td>Sulfuric Acid</td>
<td>200</td>
</tr>
<tr>
<td>ABS</td>
<td>No data</td>
</tr>
</tbody>
</table>

**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:

<table>
<thead>
<tr>
<th>Property</th>
<th>Lead (powder)</th>
<th>Lead dioxide</th>
<th>Lead sulfate</th>
<th>Electrolyte (dilute Sulfuric Acid)</th>
<th>ABS</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>solid</td>
<td>solid</td>
<td>solid</td>
<td>liquid</td>
<td>solid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Metal &amp; powder</td>
<td>powder</td>
<td>powder</td>
<td>Clear</td>
<td>plastic</td>
</tr>
<tr>
<td>Colour</td>
<td>Silver-gray</td>
<td>Dark brown power</td>
<td>White crystals</td>
<td>Colorless</td>
<td>Not determined</td>
</tr>
<tr>
<td>Melting point (°C)</td>
<td>327</td>
<td></td>
<td></td>
<td></td>
<td>130-160</td>
</tr>
<tr>
<td>Boiling point (°C)</td>
<td>290</td>
<td>1170</td>
<td>95 - 115</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solubility (in H₂O)</td>
<td>none</td>
<td>none</td>
<td>40mg/l (15°C)</td>
<td>100%</td>
<td>none</td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>&lt; 1</td>
<td>-</td>
</tr>
<tr>
<td>Density (g/m³)</td>
<td>11.34</td>
<td>9.20</td>
<td>6.20</td>
<td>~1.3</td>
<td>1.05 -1.06</td>
</tr>
</tbody>
</table>

### 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**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Acute toxicity levels</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oral LD₅₀ mg/kg</td>
<td>Inhalation LC₅₀ mg/m³</td>
</tr>
<tr>
<td>Elemental lead:</td>
<td>500 (rat)</td>
<td>4500ppm</td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>2140 (rat)</td>
<td>510 (2h) guinea pig</td>
</tr>
<tr>
<td></td>
<td></td>
<td>375 (2h) rat</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Fish</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powered Lead</td>
<td>500: 96 h Brachydanio rerio mg/L LC₅₀ static</td>
<td>600: 48 h water flea μg/L EC₅₀</td>
</tr>
<tr>
<td></td>
<td>0.44: 96 h Cyprinus carpio mg/L LC₅₀ semi-static</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.17: 96 h Oncorhynchus mykiss mg/L LC₅₀ flow-through</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.32: 96 h Oncorhynchus mykiss mg/L LC₅₀ static</td>
<td></td>
</tr>
<tr>
<td>Sulfuric acid</td>
<td>29: 24 h Daphnia magna mg/L EC₅₀</td>
<td></td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS number</th>
<th>TSCA status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inorganic lead (Pb)</td>
<td>7439-92-1</td>
<td>listed</td>
</tr>
<tr>
<td>Lead Oxide (PbO)</td>
<td>1317-36-8</td>
<td>listed</td>
</tr>
<tr>
<td>Lead Sulfate (PbSO4)</td>
<td>7446-14-2</td>
<td>listed</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

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

DISCLAIMER:

ALL PERSONS USING THIS PRODUCT, ALL PERSONS WORKING IN AN AREA WHERE THIS
PRODUCT IS USED AND ALL PERSONS HANDLING THIS PRODUCT SHOULD BE FAMILIAR WITH
THE CONTENTS OF THIS DATA SHEET. THIS INFORMATION SHOULD BE EFFECTIVELY
COMMUNICATED TO EMPLOYEES AND OTHERS WHO MIGHT COME IN CONTACT WITH THE
PRODUCT. THIS MATERIAL SAFETY DATA SHEET IS BASED UPON INFORMATION AND SOURCES
AVAILABLE AT THE TIME OF PREPARATION OR REVISION DATE. WE DO NOT ASSURE
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CORPORATION.