

Product Information Data Sheet

Lead-acid battery is not a target product for SDS(safety data sheet).

This sheet is intended to be issued in order to provide “reference information” to ensure the safe handling of the product.

1. Chemical Product and Company Identification

Product name : Valve Regulated Lead-acid battery.(VRLA)
 Series name : FMU-S series
 Model number : FMU-S-500、FMU-S-600、FMU-S-800、FMU-S-1000
 Information on company
 Company name : THE FURUKAWA BATTERY CO. ,LTD.
 Department in charge : Environmental promotion
 Address : No.2-4-1 HOSHIKAWA, HODOGAYA-KU, YOKOHAMA, KANAGAWA, JAPAN
 Phone number : 81-45-336-5055
 Fax number : 81-45-333-2534

2. Hazards Identification

GHS Classification
 Hazard class :Not applicable
 Health Hazards :Not applicable
 Environmental Hazards :Not applicable
 GHS label elements
 Symbol :None
 Signal word :None
 Hazard statements :None
 Precautionary statements :None
 Other risks :No information

3. Composition/Information on Ingredients

Chemical name or common name	Component part	Content rate (mass ratio)	Chemical formula	CAS no.
Lead	Terminal, electrode plate	50-58	Pb	7439-92-1
Lead dioxide	Electrode plate	14-22	PbO ₂	1309-60-0
Sulfuric acid	Electrolyte	19-25	H ₂ SO ₄	7664-93-9
PP Resin	Battery container, lid	2-7	-	9003-07-0

4. First-aid Measures

If inhaled : (Lead, lead dioxide, lead sulfate, Sulfuric acid)
 Remove person to fresh air, keep comfortable for breathing.
 Get medical advice/attention.

If on skin : (Lead, lead dioxide, lead sulfate)
 Wash skin with plenty of water and soap.
 If skin irritation occurs, get medical advice/attention.
 (Sulfuric acid)
 Take off or remove immediately all contaminated clothing.
 Rinse skin with water or shower.
 If skin irritation or chemical injury occurs, get medical advice/attention.

If in eyes : (Lead, lead dioxide, lead sulfate, Sulfuric acid)
 Open the eyelids with your fingers, rinse thoroughly with water for at least 15 minutes.
 Remove contact lenses, if present and easy to do. Continue rinsing.
 Get medical attention/advice.

If swallowed	: (Lead, lead dioxide, lead sulfate) Rinse mouth. Get medical advice/attention. (Sulfuric acid) Immediately call a doctor. Rinse mouth. Give plenty of water. Do not induce vomiting. Get medical advice/attention.
Most important symptoms/effects, acute and delayed	: (Lead, lead dioxide, lead sulfate) Stomach cramps, lethargy, headache, nausea, vomiting, weakness, wheezing, pallor, hemoglobinuria, collapse. (Sulfuric acid) Corrosive, burning sensation, sore throat, cough, breathlessness, shortness of breath, redness, pain, blisters, severe skin burns, severe burns, abdominal pain, shock or collapse.
Protection for first-aiders	: Rescuers wear protective equipment such as rubber gloves and tight-fitting safety goggles.
Special note to physician	: (Sulfuric acid) Symptoms of lung edema often do not show until a few hours have passed, and it might aggravate if it does not take a rest. Therefore, it is necessary to take a rest and medical observation.

5. Fire Fighting Measures

Suitable extinguishing media	: Extinguish the fire by extinguishers of dry chemical agent, foam fire extinguish agent, and non-flammable gas.
Unsuitable extinguishing media	: No information.
Specific risk/hazard	: In case of fire, there is a possibility that irritative, corrosive or toxic fumes or gases are generated. There is a possibility of explosion of the product by heat.
Specific fire fighting method	: Cut off the power in case of connection/energizing the product into the device, if can be coped with safely. Move the product from the fire area if it is not dangerous. After extinguishing the fire, continue to cool the container thoroughly with plenty of water. Immediately move the movable product to safe place when fire occurs in surrounding. If it is not movable, cool the product with water spray. Keep away the combustible materials to prevent spread fire around.
Protection for fire-fighters	: Extinguish fire from upwind. Wear appropriate protective clothes for chemical (self-contained breathing apparatus, protective glasses, etc.) to fire fighting.

6. Accidental Release Measures

Personal precautions, protective equipment and emergency measures	: Wear appropriate protective equipment (gloves, protective glasses, protective clothing and the like), when processing the leakage. Do not touch or walk through the leakage. Do not breathe dust, mist and vapour.
Precautions for the environment Method for containment and clean-up	: Be careful to not discharge the product into the rivers, sewer, and soil. : If Sulfuric acid is leaked, stopping the flow with sand and earth, absorbing mat and the like, remove by absorbing with them. And then, neutralized with sodium bicarbonate or slaked lime, and wash off with plenty of water. Absorb by sprinkling misty water when the gas is generated. Collected material should be disposed in compliance with '13. Disposal Considerations'.
Prevention of secondary hazards	: Immediately remove all ignition sources in the vicinity. Prepare fire extinguishing equipment just in case it is ignited.

7. Handling and Storage

Handling

- Technical measures : Take measure described in '8: Exposure Controls and Personal Protective Equipment', and wear appropriate protective equipment.
- Local exhaust/general ventilation : Work in a well-ventilated place and provide local exhaust or general ventilation as necessary.
- Cautions for Safety Handling : Do not use fire near the product.
Do not dismantle or modify the product.
Do not do short-circuit between the terminals.
Handling and charging of the product should be in well ventilated place.
Prevent falling and overturning of container. Careful to not give a shock.
Try to not damage the product.
Be careful that there is a possibility of spewing Sulfuric acid from the vent plug of product when open.
Be careful not to spill the Sulfuric acid.
Do not eat, drink or smoke when using this product.

Storage

- Safe Storage condition : Provide a ventilation and lighting required for storing and handling hazardous materials in the storage location.
: Do not store near the fire.
Do not store in place where is exposed to high temperature, high humidity, rain, direct sunlight.
Store in place where is no risk of fire, toxic gas, liquid droplets, generating or invasion of dust, and submerged.
- Packing material : Use a sealed container without damage or leakage.

8. Exposure Controls and Personal Protective Equipment

- Controlled exposure level : Lead (electrode plate, terminal), lead dioxide(electrode plate), lead sulfate(electrode plate)
Lead and its compounds(as lead)
TLV = 0.05 mg/m³
- ACGIH (2022) : Lead(electrode plate, terminal), lead dioxide(electrode plate),lead sulfate(electrode plate)
LEAD AND INORGANIC COMPOUNDS, AS Pb
TLV-TWA = 0.05 mg/m³
Sulfuric acid(electrolyte)
Sulfuric acid: TLV-TWA = 0.2mg/m³
- Engineering controls : Provide hand wash and eyes wash facilities and safety shower near the handling place as necessary.
- Personal protective equipment
- Respiratory protection : Wear respiratory protective equipment (air respirator, dust mask, gas mask (for acid gases)) as necessary.
- Hand protection : Wear impermeable protective gloves (acid resistance).
- Eye protection : Wear protective glasses, goggle type safety glasses and the like.
- Skin and body protection : Wear protective clothing, protective apron and the like as necessary.
- Hygiene measures : Do not eat, drink or smoke when handling.
Wash hands thoroughly after handling.
Protective equipment shall be inspected regularly according to the protective equipment checklist.

9. Physical and Chemical properties

Describes the information about the components below.

	Lead	Lead dioxide	Lead sulfate	Sulfuric acid
Physical state	Solid	Solid	Solid	Liquid
Color	Silver white	Brown	White	Colorless
Odor	No information	No information	No information	Odorless (normal temperature)
Melting point	327.4°C	888°C	1170°C	-40 -56.4°C (34%)
Boiling point, initial boiling point and boiling range	1,749°C	1,480°C	No information	No information
Flammability(solid, gas)	Non flammable	Non flammable	Non flammable	Not applicable
Lower and upper explosion limit / flammability limit	Not applicable	Not applicable	Not applicable	No information
Flash point	Non flammable	Non flammable	Non flammable	Non flammable
Auto-ignition temperature	Non flammable	Non flammable	Non flammable	Non flammable
Decomposition temperature	No information	290°C	1000°C	No information
pH	No information	No information	No information	≤1
Kinematic viscosity	Not applicable	Not applicable	Not applicable	No information
Solubility	Water: Insoluble.	Water: Insoluble.	Water: Hardly soluble.	Miscible in water. Soluble in alcohol.
Partition coefficient ;n-octanol/water(log value)	No information	No information	No information	No information
Vapour pressure	No information	No information	No information	No information
Density and/or relative density	11.35g/cm ³ (20°C)	9.53g/cm ³	6.2g/cm ³	Approx. 1.2~1.4
Relative vapour density	Not applicable	Not applicable	Not applicable	No information
Particle characteristics	No information	No information	No information	Not applicable
Other Information	No information	No information	No information	No information

10. Stability and Reactivity

Stability

: (lead)

When oxygen is present, it will be eroded by pure water and the weak organic acid. At normal temperature, it will be eroded by fluorine or chlorine. (lead dioxide/ lead sulfate)

It is considered to be stable under normal handling and storage.

(Sulfuric acid)

At first, vapor is generated by heating, and generate sulfuric acid vapors if continue to heat.

Rapid contact with water might be generate a large amount of heat, and sometimes the acid is scattered.

Sulfuric acid which is generated by diluting with water, generates hydrogen gas by the corrosion of various metals and may cause flash explosion by mixing with air.

There is hygroscopic.

Hazardous reactivity

: (lead)

It does not occur hazardous reaction under normal condition.

(lead dioxide)

React violently with combustible materials and organic matter (sulfuric acid, hydrogen peroxide, phosphoric acid), and it may cause risk of fire.

(lead sulfate)

It may react with strong oxidizing agents.

(Sulfuric acid)

It may cause fire or explosion by many reactions.

It is strong oxidant and reacts with combustible and reducing materials.
It is strong acid and reacts violently with bases and is corrosive to most common metals forming a flammable/explosive gas(hydrogen).
React with water and organic materials violently and release heat.

Conditions to avoid : Heating, contact with ignition sources (open flame, spark, etc..)
Incompatible materials : (lead): Oxidizing agent.
(lead dioxide): Flammable materials, reducing materials.
(lead sulfate): Strong oxidizing agents.
(Sulfuric acid):
Combustible materials, reducing materials, strong oxidizing agents, strong bases.

Hazardous decomposition products : In case, there is a possibility that irritative or toxic gases or fumes (sulfur trioxide, carbon monoxide, mist sulfate, sulfur dioxide, hydrogen sulfide) are generated.

11. Toxicological Information

Indicate the information for each of components of lead-acid battery as below.

	Lead	Lead dioxide	Lead sulfate	sulfuric acid
Acute toxicity (Oral)	—	—	—	Category2
Acute toxicity (Dermal)	—	—	—	—
Acute toxicity (Inhalation: Gases)	—	—	—	—
Acute toxicity (Inhalation: Vapours)	—	—	—	—
Acute toxicity (Inhalation: Dust and Mists)	—	—	—	Category2
Skin corrosion/irritation	—	Category2	—	Category1
Serious eye damage/eye irritation	—	Category2A	—	Category1
Respiratory sensitization	—	—	—	—
Skin sensitization	—	—	—	—
Germ cell mutagenicity	Category2	—	—	—
Carcinogenicity	Category2	Category2	Category1B	—
Reproductive toxicity	Category1A	Category1A	Category1A	—
Specific target organ toxicity (single exposure)	—	Category1 (blood system, kidney, nervous system)	Category1 (kidney, nervous system, digestive system, blood system)	Category1 (respiratory organs)
Specific target organ toxicity (repeated exposure)	Category1 (hematopoietic system, the kidney, central nervous systems, peripheral nervous system, cardiovascular system and immune system)	Category1 (blood system, kidney, nervous system)	Category1 (kidney, nervous system, digestive system, blood system)	Category1 (respiratory organs)
Aspiration hazard	—	—	—	—

※ “—” in the table means “not applicable” or “Classification not possible” or “Not classified” currently.

12. Ecological Information

Indicate the information for each of components of lead-acid battery as below.

	Lead	Lead dioxide	Lead sulfate	sulfuric acid
Hazardous to the aquatic environment (acute)	No data.	No data.	Category1	Category3
Hazardous to aquatic environment (chronic)	No data.	No data.	Category1	Category1
Persistence/degradability	No data.	No data.	No data.	No data.
Bioaccumulation	No data.	No data.	No data.	No data.
Mobility in soil	No information.	No information.	No information.	No data.
Hazardous to the ozone layer	Not contain ingredients listed in the Annex of the Montreal Protocol.			

13. Precautions for Disposal

Disposal considerations : In the disposal, follow “Waste Management and Public Cleansing Law” and the standards of the local government.
Entrust disposal to industrial waste disposal contractor who have obtained a license from local governor, otherwise if the local government is performing waste disposal, entrust them disposal.

14. Transport Information

International regulations(dangerous goods)

Inland transport : Follow the regulation under ADR/RID.
Sea transport : Follow the regulation under IMO.
Air transport : Follow the regulation under ICAO/IATA.
UN number : 2800
UN class : Corrosive substance/Class 8
Proper shipping name : BATTERIES, WET, NON-SPILLABLE electric storage
Packing group : -
Special requirements : IMO SP238
IATA A67, A183
Marine pollutant : Not applicable
HS code : 8507.20 (Other Lead-acid batteries)

15. Regulatory Information

NFPA Hazard Rating for sulfuric acid:

Flammability (Red) :0
Health (Blue) :3
Reactivity (Yellow) :2

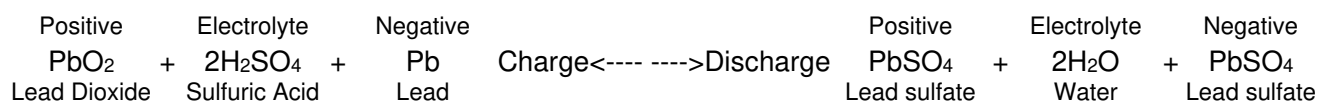
TSCA (Toxic Substances Control Act)

Each component parts of battery is listed in the TSCA Registry as follows.

Components	Chemical Formula	TSCA Status
Lead	Pb	Listed
Lead Dioxide	PbO ₂	Listed
Sulfuric Acid	H ₂ SO ₄	Listed

16. Other Information

Electrochemical reaction formula:



Reference:

Globally Harmonized System of classification and labeling of chemicals, (6th ed., 2015), UN
JIS Z 7253:2019

- 1) NITE GHS classification data.
- 2) ECHA Home page (<http://echa.europa.eu/information-on-chemicals>)
- 3) NITE CHRIP (http://www.safe.nite.go.jp/japan/sougou/view/SystemTop_jp.faces)

Notice:

The contents described in this SDS are prepared based on the data and information currently available to us. However, it does not intend to be any guarantees in regard to content, physical and chemical properties, hazards, etc.

Please handle this product in the responsibility of the user after referring to this SDS.

In addition, the precautions are intended for normal handling. Please use under implementing safety measures that are suitable for application/usage if you want to special handling.