



**GS Battery USA Inc., a subsidiary of
JAPAN STORAGE BATTERY CO. LTD.**

Material Safety Data Sheet

GS PORTALAC, PE, PX, PXL, and PWL Series VALVE
REGULATED LEAD ACID (VRLA) BATTERY, ABSORBED
ELECTROLYGE (AGM)

Section I – Product Identification

Manufacturer's name GS Battery USA Inc. 1000 Mansell Exchange West Suite 350 Alpharetta GA 30022	Emergency Telephone Number
	CHEMTREC: (800) 424-9300
	Telephone Number for Information
	GS Battery USA Inc.: (678) 762-4818
Date Issued:	April 1 2002.
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Section II—Hazardous Ingredients/Identity Information

Components)	CAS Number	Approx wt%	OSHA PEL ($\mu\text{g}/\text{m}^3$)	ACGIH TLV ($\mu\text{g}/\text{m}^3$)	NIOSH ($\mu\text{g}/\text{m}^3$)
Inorganic Lead/Lead Compounds	7439-92-1	65%-75%	50	150	10
Tin	7440-31-5	<.5%	2000	2000	N/A
Calcium	7440-70-2	<0.1%	N/A	N/A	N/A
Electrolyte: Dilute Sulfuric Acid	7664-93-9	14-20%	1000	1000	1000
Case Material: Acrylonitrile Butadiene Styrene	9003-56-9	5-10%	N/A	N/A	N/A

Inorganic lead and electrolyte (sulfuric acid) are the main components of every VALVE REGULATED LEAD ACID battery manufactured by Japan Storage Battery Co. LTD. Other ingredients may be present dependent upon the specific battery type. Contact Japan Storage Battery Co. LTD (JAPAN) or GS Battery USA Inc.(North America) for additional information.

Section III—Physical/Chemical Characteristics

ELECTROLYTE (Sulfuric Acid, dilute)

Boiling Point	203°F-240°F	Specific Gravity (H ₂ O = 1)	1.230 to 1.350
Vapor Pressure (mm Hg)	10-17	Melting Point	N/A
Vapor Density (AIR = 1)	Greater than 1	Evaporation Rate (Butyl Acetate = 1)	Less than 1
Solubility in Water	100%	Appearance and Odor	Electrolyte: Clear liquid with sharp, penetrating, pungent odor.

Section IV—Fire and Explosion Hazard Data

Flash Point (Method Used) N/A		LEL 4.1% (H ₂ Gas_)	UEL
Flammable Limits:	LEL = 4.1% (Hydrogen Gas), UEL = 74.2%		
Extinguishing Media:	CO ₂ , foam, dry chemical		
Special Fire Fighting Procedures	If batteries are on charge, shut of power. Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid resistant clothing, gloves, face and eye protection.		
Unusual Fire and Explosion Hazards	VRLA batteries generate highly flammable hydrogen gas during operation. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from batteries. Do not allow metallic articles to simultaneously contact the negative and positive terminal of the battery.		

Section V—Reactivity Data

Stability	Unstable		Conditions to Avoid
	Stable	X	Prolonged overcharge on high current, ignition sources

Incompatibility (Materials to Avoid)

Sulfuric acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas

Lead Compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents.

Hazardous Decomposition or Byproducts

Sulfuric acid: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen sulfide.

Lead Compounds: High temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas..

Hazardous Polymerization

Section VI—Health Hazard Data

Route(s) of Entry

Sulfuric acid: Harmful by all routes of entry.

Lead Compounds: Hazardous exposure can occur only when product is heated, oxidized, or otherwise process or damaged to create dust, vapor or fume.

Inhalation?

Sulfuric acid: Breathing sulfuric acid vapors and mists may cause severe respiratory.

Lead Compounds: Dust or fumes may cause irritation of upper respiratory tract or lungs

Skin Contact

Sulfuric acid: Severe irritation, burns and ulceration.

Lead Compounds: Not absorbed through the skin.

Ingestion

Sulfuric acid: May cause severe irritation of the mouth, throat, esophagus, and stomach.

Lead Compounds: May cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping. Acute ingestion should be treated by a physician.

Eye Contact

Sulfuric acid: Severe irritation, burns, cornea damage, and possible blindness.

Lead Compounds: May cause eye irritation.

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: May cause anemia, damage to kidneys and nervous system, and damage to reproductive system in both males and females.

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.

Medical Conditions Generally Aggravated by Exposure

Inorganic lead and its compounds can aggravate chronic forms of kidney, liver, and neurologic diseases. Contact of battery electrolyte (acid) 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.

Emergency and First Aid Procedures

Inhalation:

Sulfuric acid: Remove to fresh air immediately. If breathing is difficult, give oxygen
Lead Compounds: Remove from exposure, gargle, wash nose and lips, consult physician

Ingestion:

Sulfuric acid: Do not induce vomiting, consult a physician immediately.
Lead Compounds: Consult a physician immediately

Eyes

Sulfuric acid: Flush immediately with water for 15 minutes, consult a physician.
Lead Compounds: Flush immediately with water for 15 minutes, consult a physician

Skin:

Sulfuric acid: Flush with large amounts of water for at least 15 minutes, remove any contaminated clothing. If irritation develops seek medical attention.
Lead Compounds: Wash with soap and water.

Section VII—Precautions for Safe Handling and Use

Steps to Be Taken in Case Material Is Released or Spilled

There is no release of material unless the case is damaged or battery is misused/overcharged. If release occurs stop flow of material, contain/absorb all spills with dry sand, earth, or vermiculite. Do not use combustible materials. Neutralize spilled material with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Dispose of as hazardous waste. Do not discharge un-neutralized acid to sewer

Waste Disposal Method

Spent Batteries – send to secondary lead smelter for recycling. Follow applicable federal, state and local regulations Neutralize as in preceding step. Collect neutralized material in sealed container and handle as hazardous waste as applicable.

Precautions to Be Taken in Handling and Storing

Store batteries in a cool, dry, well ventilated area that are separated from incompatible materials and any activities which may generate flames, sparks, or heat. Keep all metallic articles that could contact the negative and positive terminals on a battery and create a short circuit condition.

Section VIII—Control Measures

Respiratory Protection (*Specify Type*)

None required under normal conditions. If battery is overcharged and concentrations of sulfuric acid are known to exceed PEL use NIOSH or MSHA approved respiratory protection.

Engineering Controls:

Store and handle batteries in a well ventilated area. If mechanical ventilation is used, components must be acid resistant

Protective Gloves

None needed under normal conditions. If battery case is damaged use rubber or plastic gloves with elbow length gauntlet.

Eye Protection

None needed under normal conditions. IF handling damaged or broken batteries use chemical splash goggles or face shield.

Other Protective Clothing or Equipment

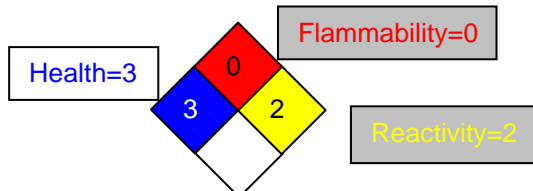
None needed under normal conditions. In case of damaged or broken battery use an acid resistant apron. Under severe exposure or emergency conditions wear acid resistant clothing.

Work/Hygienic Practices

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

Section IX—Regulatory Information

NFPA Hazard Rating for sulfuric acid



Transportation:

U.S. DOT/IMDG/IATA Shipping information

Proper Shipping Name: Batteries, wet, non-spillable
 Hazard Class: 8
 ID Number: UN2800
 Packing Group: 3
 Label/Placard: CORROSIVE

GS Battery USA Inc.'s Portalac series VRLA batteries have been tested and meet the "non-spillable electric storage batteries" criteria as required by DOT CFR 49, 173.159 (d), and IMO/IMDG, and ICAO/IATA packaging instructions 806 and A67, and therefore are non-regulated as long as the following criteria are met:

1. The batteries must be protected against short circuits and securely packaged.
2. The batteries and their outer packaging must be plainly and durably marked "NON-SPILLABLE" or "NONSPILLABLEBATTERY".

Contact your GS Battery USA Inc. representative for additional informational regarding the classification of batteries.

Regulatory Information

RCRA: Spent lead-acid batteries are not regulated as hazardous waste by the EPA when recycled, however state and International regulations may vary.

CERCLA (Superfund) and EPCRA:

- (a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.
- (b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs.
- (c) EPCRA Section 302 notification is required if 1,000 lbs. or more of sulfuric acid is present at one site. The quantity of sulfuric acid will vary by battery type. Contact GS Battery USA Inc. for additional information.
- (d) EPCRA Section 312 Tier 2 reporting is required for batteries if sulfuric acid is present in quantities of 500 lbs. or more and/or if lead is present in quantities of 10,000 lbs. or more.
- (e) Supplier Notification: This product contains toxic chemicals, which may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. If you are a manufacturing facility under SIC codes 20 through 39, the following information is provided to enable you to complete the required reports:

Toxic Chemical	CAS Number	Approximate % by Wt.
Lead	7439-92-1	60
Sulfuric Acid	7664-93-9	30
Arsenic	7440-38-2	0.2

If you distribute this product to other manufacturers in SIC Codes 20 through 39, this information must be provided with the first shipment of each calendar year. The Section 313 supplier notification requirement does not apply to batteries, which are "consumer products". Not present in all battery types. Contact GS Battery USA Inc. for additional information.

TSCA

Ingredients in GS Battery USA Inc.'s batteries are listed in the TSCA Registry as follows:

Components	CAS Number	TSCA Status
Electrolyte		
Sulfuric Acid (H ₂ SO ₄)	7664-93-9	Listed
Inorganic lead Compound:		
Lead (Pb)	7439-92-1	Listed
Lead Oxide (PbO)	1317-36-8	Listed
Lead Sulfate (PbSO ₄)	7446-14-2	Listed
Arsenic (As)	7440-38-2	Listed
Calcium (Ca)	7440-70-2	Listed
Tin (Sn)	7440-31-5	Listed