



# Safety Data Sheet

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## 1. PRODUCT AND COMPANY IDENTIFICATION

**Product Name** Valve Regulated Maintenance Free Lead-Acid Batteries:  
MQ, MX, GR, GX

**Recommended Use** Lead acid battery. Lead Acid (Non-spillable) Battery

**Distributor's Name/Address**

Company Name : Power Storage Solutions

Address: 10490 Markison Road, Dallas, TX 75238

**Emergency Telephone:** For information and emergencies, contact Power Storage Solutions Environmental, Health & Safety Dept. at 888-813-5049

**24-Hour Emergency Response Contact:** CHEMTREC DOMESTIC: 800-255-3924  
CONTRACT: mis6145614

## 2. HAZARDS IDENTIFICATION

### Emergency Overview




NOTE: Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery acid and lead exposure that may occur during battery production or container breakage or under extreme heat conditions such as fire.

In case of rupture: Corrosive The product causes burn of eyes, skin and mucous membranes

**Appearance:** No information available.      **Physical State:** Solid.      **Odor:** Odorless

Health		Environmental		Physical
Acute Toxicity (Oral/Dermal/Inhalation)	Category 4	Aquatic	Chronic 1	Explosive Chemical Division 1.3
Skin Corrosion/Irritation	Category 1A	Aquatic	Acute 1	
Eye Damage	Category 1			
Reproductive	Category 1A			
Carcinogenicity (lead)	Category 2A			
Carcinogenicity (acid mist)	Category 1A			
Specific Target Organ Toxicity (Repeated exposure)	Category 1A			

Label Elements :

Health	Environmental	Physical
		
<p><b>Hazard Statements DANGER!</b>                      Causes severe skin burns and eye damage. Causes serious eye damage.                      May damage fertility or the unborn child if ingested or inhaled.                      May cause cancer if ingested or inhaled.                      Causes damage to central nervous system, blood, and kidneys through prolonged or repeated exposure.                      May form explosive air/gas mixture during charging.                      Extremely flammable gas (hydrogen). Explosive, fire, blast, or projection hazard.</p>	<p><b>Precautionary Statements</b> Wash thoroughly after handling.                      Do not eat, drink, or smoke when using this product.                      Wear protective gloves/protective clothing, eye protection/face protection.                      Avoid breathing dust/fume/gas/mist/vapors/spray.                      Use only outdoors or in a well ventilated area. Causes skin irritation, serious eye damage.                      Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid.                      Irritating to eyes, respiratory system, and skin.</p>	

**Potential Health Effects**

**Principle Routes of Exposure**

Skin contact.

**Acute Toxicity**

**Eyes**

Corrosive to the eyes and may cause severe damage including blindness.

**Skin**

Causes burns.

**Inhalation**

Harmful by inhalation. Contact with moist mucous membranes of the respiratory system can cause caustic condition resulting in burns.

**Ingestion**

Harmful if swallowed. Can burn mouth, throat, and stomach.

**Chronic Effects**

Lead compounds may be absorbed by ingestion, by inhalation and through the skin. Lead may damage kidney function, the blood forming system and the reproductive system. Avoid repeated exposure.

**Main Symptoms**

Severe exposures can lead to shock, circulatory collapse, and death Lead poisoning is characterized by a metallic taste in the mouth, loss of appetite indigestion, nausea, vomiting, constipation, sleep disturbances and overall weakness

**Aggravated Medical Conditions**

None known.

**Environment Hazard**

See Section 12 for additional Ecological Information

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	CAS-No	Weight %
Lead	7439-92-1	65~75
Sulfuric acid	7664-93-9	10~20
ABS resin	9003-56-9	~5
Tin	7440-31-5	<0.5
Calcium	7440-70-2	<0.1

## 4. FIRST AID MEASURES

<b>General Advice</b>	First aid is upon rupture of sealed battery.
<b>Eye Contact</b>	Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.
<b>Skin Contact</b>	Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.
<b>Inhalation</b>	Move to fresh air. Call a physician or Poison Control Center immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
<b>Ingestion</b>	Immediate medical attention is required. Call a physician or Poison Control Center immediately. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Remove from exposure, lie down.
<b>Notes to Physician</b>	Treat symptomatically.
<b>Protection of First Responders</b>	Use personal protective equipment. Avoid contact with skin, eyes, and clothing.

## 5. FIRE-FIGHTING MEASURES

<b>Flash Point</b>	Hydrogen – 259 °C
<b>Auto ignition</b>	Hydrogen – 580 °C
<b>Temperature</b>	
<b>Flammable Limits</b>	LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2%
<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Uniform Fire Code</b>	Corrosive: Acid-Liquid
<b>Hazardous Combustion Products</b>	Hazardous metal fumes and oxides.
<b>Explosion Data Sensitivity to Mechanical Impact</b>	No.
<b>Sensitivity to Static Discharge</b>	No.
<b>Specific Hazards Arising from the Chemical</b>	The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes.
<b>Protective Equipment and Precautions for Firefighters</b>	

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**NFPA**      **Health Hazard 3**      **Flammability 0**      **Stability 2**      **Physical and Chemical Hazards**

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Do not get in eyes, on skin, or on clothing.
<b>Environmental Precautions</b>	Refer to protective measures listed in Sections 7 and 8.
<b>Methods for Containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for Cleaning Up</b>	In case of rupture: Use personal protective equipment. Dam up. Soak up with inert absorbent material. Take up mechanically and collect in suitable container for disposal. Clean contaminated surface thoroughly.
<b>Other Information</b>	Refer to protective measures listed in Sections 7 and 8.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Handle in accordance with good industrial hygiene and safety practice.
<b>Storage</b>	Keep containers tightly closed in a dry, cool and well-ventilated place.
<b>Charging:</b>	There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether being charged. Shut -off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged may generate and release flammable hydrogen gas. Charging space should be ventilated. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.
<b>Other</b>	Follow Manufacturers Recommendations regarding maximum recommended currents and operating temperature range. Do not overcharge beyond the recommended upper charging voltage limit. Applying pressure or deforming the battery may lead to disassembly followed by eye, skin and throat irritation.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Lead 7439-92-1	TWA: 0.05 mg/m <sup>3</sup>	TWA: 50 µg/m <sup>3</sup> Action Level: 30 µg/m <sup>3</sup> Poison, See 29 CFR 1910.1025	IDLH: 100 mg/m <sup>3</sup> TWA: 0.050 mg/m <sup>3</sup>
Sulfuric acid 7664-93-9	TWA: 0.2 mg/m <sup>3</sup> thoracic fraction	TWA: 1 mg/m <sup>3</sup> (vacated) TWA: 1 mg/m <sup>3</sup>	IDLH: 15 mg/m <sup>3</sup> TWA: 1 mg/m <sup>3</sup>
Tin 7440-31-5	TWA: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup> Sn except oxides (vacated) TWA: 2 mg/m <sup>3</sup>	IDLH: 100 mg/m <sup>3</sup> TWA: 2 mg/m <sup>3</sup>

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA

PEL: Occupational Safety and Health Administration - Permissible Exposure Limits.

NIOSH IDLH: Immediately Dangerous to Life or Health.

**Other Exposure Guidelines** Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir. , 1992).

**Engineering Measures** Showers Eyewash stations  
Ventilation systems

### Personal Protective Equipment

**Eye/Face Protection**

Tightly fitting safety goggles.

**Skin and Body Protection**

Wear protective gloves/clothing.

**Respiratory Protection**

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance and Odor</b>	Manufactured article; no apparent odor. Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.
<b>Odor Threshold</b>	Not applicable.
<b>pH</b>	Not applicable
<b>Boiling Point</b>	Not applicable unless individual components exposed. Battery Electrolyte (Acid) - 230 - 233.6 °F (110 - 112 °C) Lead - 3191 °F (1755 °C)
<b>Melting Point</b>	Lead - 621.32 °F (327.4 °C)
<b>Specific Gravity (H<sub>2</sub>O = 1)</b>	1.215 to 1.350
<b>Flash Point</b>	498.2 °F (259.0 °C) Hydrogen
<b>Evaporation Rate (Butyl Acetate = 1)</b>	< 1
<b>Vapor Pressure (mm Hg @ 20 °C)</b>	Battery Electrolyte (Acid) 11.7
<b>Flammability</b>	
<b>Upper/lower flammability or explosive limits</b>	Hydrogen      Flammability Limit Lower - 4.1 % Flammability Limit Upper - 74.2 %
<b>Vapor Pressure</b>	Not applicable.
<b>Vapor Density (Air = 1)</b>	3.4 Battery Electrolyte (Acid)
<b>Relative Density</b>	1.21 - 1.3 Battery Electrolyte (Acid)
<b>Solubility</b>	Lead and Lead dioxide are not soluble. 100 % Battery Electrolyte (Acid).
<b>% Volatile by Weight</b>	Not applicable unless individual components exposed.
<b>Partition coefficient (n-octanol/water)</b>	Not applicable
<b>Auto-ignition temperature</b>	1076 °F (580 °C) Hydrogen.

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under recommended storage conditions.
<b>Incompatible Products</b>	Incompatible with strong acids and bases. Incompatible with oxidizing agents.
<b>Conditions to Avoid</b>	Exposure to air or moisture over prolonged periods.
<b>Hazardous Decomposition Products</b>	Thermal decomposition can lead to release of toxic/corrosive gases and vapors
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.

## 11. TOXICOLOGICAL INFORMATION

**Acute Toxicity**

**Product Information**      Product does not present an acute toxicity hazard based on known or supplied information.

**Irritation**      Causes severe irritation and or burns

**Component Information**

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sulfuric acid	= 2140 mg/kg ( Rat )	-	= 510 mg/m <sup>3</sup> ( Rat ) 2 h

**Chronic Toxicity** Lead compounds may be absorbed by ingestion, by inhalation and through the skin. Lead may damage kidney function, the blood forming system and the reproductive system. Avoid repeated exposure.

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Lead	A3	Group 2A	Reasonably Anticipated	X
Sulfuric acid	A2	Group 1	Known	X
ABS resin		Group 3		

**ACGIH: (American Conference of Governmental Industrial Hygienists)**

A2 - Suspected Human Carcinogen A3 - Animal Carcinogen

**IARC: (International Agency for Research on Cancer)**

Group 1 - Carcinogenic to Humans  
Group 2A - Probably Carcinogenic to Humans

**NTP: (National Toxicity Program)**

Known - Known Carcinogen  
Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

**OSHA: (Occupational Safety & Health Administration)**

X - Present

<b>Reproductive Toxicity</b>	Product is or contains a chemical which is a known or suspected reproductive hazard.
<b>Developmental Toxicity</b>	Contains ingredients that have suspected developmental hazards. Inorganic lead compounds can cause developmental damage.
<b>Target Organ Effects</b>	None known.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

The environmental impact of this product has not been fully investigated.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Lead		LC50: 0.44 mg/L (96 h semi-static) Cyprinus carpio LC50: 1.17 mg/L (96 h flow-through) Oncorhynchus mykiss LC50: 1.32 mg/L (96 h static) Oncorhynchus mykiss		EC50: 600 µg/L (48 h ) water flea
Sulfuric acid		LC50: > 500 mg/L (96 h static) Brachydanio rerio		EC50: 29 mg/L (24 h ) Daphnia magna

## 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Methods** This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261). Should not be released into the environment.

**Contaminated Packaging** Do not re-use empty containers.

**US EPA Waste Number** D002 D008

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Lead 7439-92-1	(hazardous constituent - no waste number)	Included in waste streams: F035, F037, F038, F039, K002, K003, K005, K046, K048, K049, K051, K052, K061, K062, K064, K065, K066, K069, K086, K100, K176	= 5.0 mg/L regulatory level	

#### California Hazardous Waste Codes 792

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California EHW	California Carc	California Hazardous Waste	California Waste - Part 2
Lead			Toxic	TCLP (for CA Toxicity): 5.0 mg/L
Sulfuric acid			Toxic Corrosive	
Calcium	Ignitable Reactive			

## 14. TRANSPORT INFORMATION

**Note:** Transportation requirements do not apply once the battery pack has been installed in a vehicle as part of the vehicle's functional components.

**Transportation:** Sealed Lead Acid / OPTIMA Battery is not a DOT Hazardous Material

**Other:** Per DOT, IATA, ICAO, and IMDG rules and regulations, these batteries are exempt from "UN2800" classification as a result of successful completion of the following tests:

- 1.) Vibration tests
- 2.) Pressure Differential Tests
- 3.) Case Rupturing Tests (no free liquids)

#### United States DOT:

Not regulated as dangerous goods per 49 CFR 173.159d

#### IATA

Not regulated as dangerous goods per Special Provision A67

#### IMDG

Not regulated as dangerous goods per exception 238

## 15. REGULATORY INFORMATION

#### International Inventories

TSCA Complies  
DSL Not determined

#### U.S. Federal Regulations

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA) . This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS-No	Weight %	SARA 313 - Threshold Values %
Lead	7439-92-1	65~75	0.1
Sulfuric acid	7664-93-9	10~20	1.0

**SARA 311/312 Hazard Categories Acute Health Hazard** Yes

**Chronic Health Hazard** Yes  
**Fire Hazard** No  
**Sudden Release of Pressure Hazard** No  
**Reactive Hazard** No

**Clean Water Act**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Lead		X	X	
Sulfuric acid	1000 lb			X

**Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)**

This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

Chemical Name	CAS-No	Weight %	HAPS data	VOC Chemicals	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Lead	7439-92-1	65~75				

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Lead	10 lb	
Sulfuric acid	1000 lb	1000 lb

**U.S. State Regulations**

**California Proposition 65**

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Lead	7439-92-1	Carcinogen Developmental Female Reproductive Male Reproductive
Sulfuric acid	7664-93-9	Carcinogen

**U.S. State Right-to-Know Regulations**

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Lead	X	X	X	X	X
Tin	X	X	X		
Calcium	X	X	X		
Sulfuric acid	X	X	X	X	X

**International Regulations**

**Mexico - Grade** Minimum risk, Grade 0



Chemical Name	Carcinogen Status	Exposure Limits
Lead	A3	Mexico: TWA= 0.15 mg/m <sup>3</sup>
Tin		Mexico: TWA 2 mg/m <sup>3</sup> Mexico: STEL 4 mg/m <sup>3</sup>
Sulfuric acid	A2	Mexico: TWA 1 mg/m <sup>3</sup>

#### Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

#### WHMIS Hazard Class

D2A Very toxic materials E Corrosive material



Chemical Name	NPRI
Lead	X
Sulfuric acid	X

#### Legend

NPRI - National Pollutant Release Inventory

## 16. OTHER INFORMATION

**Prepared By** Power Storage Solutions  
10490 Markison Road  
Dallas, TX 75239  
888-813-5049

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**Revision Note** No information available

#### General Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of Safety Data Sheet