

MATERIAL SAFETY DATA SHEET

This Material Safety Data Sheet complies with the Canadian Controlled Product Regulations.

1. Product and Supplier Identification

Product: PowerMaxx SLA/AGM

Product Use: DC Power Source

Supplier: Batteries Du Québec Inc.
727, Boul. Pierre Bertrand,
Québec, Québec, G1M 2E4
Telephone: (418) 523-7888

Manufacturer: SHENZHEN RITAR POWER COMPANY LIMITED
Room 405, Tower C ,Huahan Building , Longshan Road 16
North high-tech industrial park, Nanshan District,
Shenzhen, 518057, China

2. Composition

Component	% (w/w)	Exposure Limits
Lead, Lead sulphate, Lead oxide (as lead) (CAS No.7439-92-1)	65-75	PEL-TWA 0.05 mg/m ³ TLV-TWA 0.05 mg/m ³
Sulphuric acid (CAS No.7664-93-9)	17-30	PEL-TWA 1.0 mg/m ³ TLV-TWA 1.0 mg/m ³ TLV-STEL 3.0 mg/m ³

3. Hazards Identification

Routes of Entry:

In new condition manufactured article (under normal conditions of use)

Skin Contact: Minor Eye Contact: Minor Ingestion: Minor Inhalation: Minor

Damaged or leaking battery

Skin Contact: Major Eye Contact: Major Ingestion: Moderate Inhalation: Moderate

Effects of Short-Term (Acute) Exposure:

Inhalation: This battery is sealed and does not release gasees or mists dduring use or recharging, therefore, inhalation is not a route of exposure for this product. In the case of a leaking battery, inhalation of sulphuric acid fumes or mists may cause severe mucous membrane and respiratory tract irritation. Severe overexposure may cause pulmonary edema.

Skin Contact: This battery is sealed and will not leak electrolyte under normal conditions of use, hence skin contact with electrolyte is unlikely. In the case of a leaking or damaged battery, acid contact will cause severe irritation and burns.

Hazards Identification, continued

Eye Contact: This battery is sealed and will not leak electrolyte under normal conditions of use, hence eye contact with electrolyte is unlikely. In the case of a leaking or damaged battery, acid contact will cause severe irritation, burns, corneal damage and possible blindness.

Ingestion: This battery is sealed and will not leak electrolyte under normal conditions of use, therefore, ingestion of the electrolyte is very unlikely. Swallowing of the acid electrolyte will cause severe irritation and burns of the mouth and gastrointestinal tract.

Effects of Long-Term (Chronic) Exposure:

Long term exposure to battery electrolyte may cause lead poisoning with such symptoms as fatigue, insomnia, constipation, abdominal pain, central nervous system depression, anemia. May also accumulate in target organs such as the kidneys and liver.

Lead exposure is known to cause birth defects and reproductive problems. Chronic exposure to sulphuric acid mist may cause lung damage and increase the risk of lung cancer.

Medical Conditions Aggravated By Exposure:

Pre-existing respiratory and skin disorders.

4. First Aid Measures

Eye Contact: Flush contaminated eye(s) with lukewarm, gently running water for 30 minutes, holding eyelids open. Seek medical attention if irritation persists.

Skin Contact: Wash affected area immediately with mild soap and water and continue for 15 minutes. If irritation persists, seek immediate medical attention. Remove any contaminated clothing and launder clothing before reuse.

Inhalation: If victim has been exposed to vapors remove to fresh air. If breathing has stopped, a trained person should perform artificial respiration. Get medical attention immediately.

Ingestion: If small amounts have been ingested, do not induce vomiting. Dilute contents of stomach with 1-2 glasses of water. If large amounts have been ingested, see a doctor immediately for gastric lavage with a cuffed endotracheal tube. If vomiting occurs naturally have victim lean forward to reduce risk of aspiration. Seek immediate medical attention.

5. Fire Fighting Measures

Flash point:	Not Applicable
Autoignition temperature:	Not applicable. See information under "Fire Fighting Instructions"
Lower Explosive Limit:	4% (Hydrogen)
Upper Explosion Limit:	75% (Hydrogen)
Sensitivity to Impact:	Not sensitive.
Sensitivity to Static Discharge:	Hydrogen gas is sensitive.

Hazardous Combustion Products: Burning may produce oxides of sulphur, hydrogen and lead, lead oxides and oxides of various lead impurities.

Fire Fighting Measures, continued

Extinguishing Media: No specific recommendation. Use media to suppress surrounding fire.

Fire Fighting Instructions: Do not enter confined fire space without proper personal protection. Use approved positive pressure self-contained breathing apparatus. Do not use water except as a fog. Cool surrounding containers with water spray. Prevent runoff to sewers and waterways.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) HAZARD INDEX:

HEALTH: 3 - Very short exposure could cause serious temporary or residual injury requiring immediate attention.

FLAMMABILITY: 0 - Will not burn.

REACTIVITY: 1 - Normally stable but can become unstable at elevated temperatures and pressures, or may react non-violently with water.

SPECIFIC HAZARDS: Corrosive, toxic

6. Accidental Release Measures

Personal Protection: Evacuate unnecessary personnel from spill area. Wear appropriate personal protective equipment. Ventilate area. Do not touch spilled product without proper personal protection. See Section 8 for proper protective equipment to be worn while cleaning an accidental spill.

Environmental Precautions: Implement spill control plan. Stop or reduce leak if safe to do so. Prevent from entering sanitary or storm sewers, waterways, or confined spaces. Use inert materials such as earth or sand to form dike. Keep from contacting aquatic life.

Remedial Measures: Restrict access to area until completion of cleanup. Ensure cleanup is conducted by trained personnel only. Use all appropriate personal protective equipment. For small spills: absorb with neutralizing materials such as soda ash or lime and collect in sealed containers. Flush area with water. For large spills, contain and collect spilled material if possible. Notify government occupational health and safety and environmental authorities as per applicable regulations.

7. Handling and Storage

Handling Procedures: Handle the battery with care. Rough treatment or dropping may cause a fracture in the battery case releasing electrolyte. Should this occur, avoid all skin contact. Store in a well-ventilated area away from extreme heat, sparks, or open flames.

Take care not to short circuit battery terminals. Do not cover battery terminals with materials such as clothing, sleeping bags, or rags. Do not recharge battery in damp, moist areas.

Wash face and hands thoroughly after handling and before eating, drinking, or using tobacco products.

Storage: Store in a well-ventilated area away from extreme heat, sparks, or open flames. Store away from incompatible materials. Electrolyte contact with combustible or organic materials may cause fire or explosion. Electrolyte may react violently with strong reducing agents, metals, sulphur trioxide gas and water. Contact with metals may produce toxic sulphur dioxide and flammable hydrogen gas. Keep storage area separate from populated work areas.

8. Exposure Controls, Personal Protection

Engineering Controls: Use general or local exhaust ventilation to maintain exposure below the exposure limits.

Respiratory Protection: If respiratory protection is required, NIOSH recommends for sulphuric acid vapour or mist in air:

Up to 25 ppm: Chemical cartridge respirator with inorganic acid cartridge(s), powered air-purifying respirator with appropriate cartridge(s), Supplied Air Respirator (SAR), or a full face-piece SCBA. IDLH Conditions (25 ppm) or Planned Entry in Unknown Concentrations: Positive pressure, full face-piece SCBA, or positive pressure full face-piece SAR with an auxiliary positive pressure SCBA.

Escape: Gas mask with canister, or escape type SCBA.

NOTE: Air purifying respirators do not protect against oxygen deficient atmospheres.

Skin protection: Wear impervious gloves and boots and/or other protective clothing according to circumstances.

Eye and Face Protection: Eye protection is required. Chemical safety goggles are recommended. The wearing of contact lenses is not recommended.

Footwear: As required by worksite rules.

Other: Have a safety shower and eye wash station readily available in the immediate work area.

9. Physical and Chemical Properties

For electrolyte:

Appearance:	Colourless to yellow-brown liquid	Vapour Density:	Low
Odour:	Sharp acrid odor	Freezing Point	-40 °C
Odour Threshold:	Not determined	Boiling Point:	110 °C
pH:	< 1	Critical Temperature:	Not applicable.
Vapour Pressure:	Not determined	Relative Density:	1.265 (water = 1)
Solubility:	Completely soluble in water	Partition Coefficient:	Soluble in water
		Evaporation Rate:	Not determined

10. Stability and Reactivity

Chemical Stability: Stable. Avoid heat – releases toxic gases with heat.

Incompatibility: Very corrosive to most metals, producing flammable hydrogen gas. Reacts violently with bases to produce heat. Reacts with reducing agents to produce heat, fire and flammable hydrogen gas. Reacts with oxidizing agents to produce heat. Reacts with carbides, turpentine, phosphorus hydrogen sulphide, organic materials, and alkalis. Contact with explosives may cause detonation. Reacts with cyanides to produce toxic cyanide gas, and sulphides to produce toxic hydrogen sulphide gas.

Hazardous Decomposition Products: Thermal decomposition liberates toxic corrosive fumes of sulphur trioxide and water.

Hazardous Polymerization: Will not occur

11. Toxicological Information

Acute Exposure: mg/kg	The theoretical LD ₅₀ (rat/oral) for battery electrolyte is 2140
Chronic Exposure:	See Section 3.
Exposure Limits:	See Section 2.
Irritancy:	See Section 3.
Sensitization:	See Section 3.
Carcinogenicity:	Many lead compounds are possible carcinogens.
Teratogenicity:	No reports for ingestion or inhalation of copper compounds
Reproductive toxicity:	Lead compounds are possible reproductive toxins.
Mutagenicity:	Inconclusive results
Synergistic products:	None reported.

12. Ecological Information

Environmental toxicity: Information is scarce, but many lead compounds are marine pollutants.

Biodegradability: No data available.

13. Disposal Considerations

Place used and contaminated material and packagings into suitable containers and dispose of as controlled waste. Review and follow all local, provincial, and national regulations.

14. Transport Information

Transport of Dangerous Goods (CLR): Not regulated for transport. Meets with Special Provision 39(2), Clear Language.

International Air Transport Association (IATA): Not regulated for transport. Meets with the requirements of Special Provision A67, 43rd Edition of The IATA Regulations.

International Maritime Organization (IMO): Not regulated for transport

15. Regulatory Information

CANADIAN FEDERAL REGULATIONS:

CEPA, DOMESTIC SUBSTANCES LIST: All ingredients are listed.

WHMIS CLASSIFICATION: D1A, D2B, E

16. Other Information

Preparation Date: January 2012

Prepared by: Batteries Du Québec Inc.

Comments: The information in the Material Safety Data Sheet is offered for your consideration and guidance when exposed to this product. Batteries Du Québec Inc., expressly disclaims all expressed or implied warranties and assumes no responsibilities for the accuracy or completeness of the data contained herein. The data in this MSDS does not apply to use with any other product or in any other process.

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