



MATERIAL SAFETY DATA SHEET

ACCORDING TO 91/155/EEC AND ISO 11014-1

DATE: October 25, 2006

NUMBER: RJSSH061058MSDSUS

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Valve Regulated Sealed Lead Acid Rechargeable Battery

Trade Name: Amstron Power Solutions

Products Ranges: All AP series (Standby , Long Life, Deep Cycle, High Discharge, EV)

Name of Company:

Amstron Power Solutions

Address (Number, Street, City, State, and ZIP Code):

28918 Hancock Parkway, Valencia, CA 91355, United States

Telephone Number for Information: 866-504-1634

Fax Number for Information: 818-504-1636

SECTION 2 - COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Mixture	Percent	CAS No.
Lead, Lead Compounds (Electrode Plate)	70%	7439-92-1
Fiberglass (separator)	5%	N/A
ABS (Container)	5%	9003-56-9
Sulfuric Acid (Electrolyte)	20%	7664-93-9

SECTION 3 - HAZARDS IDENTIFICATION

Sulfuric Acid: Under normal conditions of use, sulfuric acid vapors and mist are not generated. Sulfuric acid vapors and mist may be generated when product is overheated, oxidized or otherwise processed or damaged.

Lead Compounds: Under normal conditions of use, lead dust, vapors, and fumes are not generated. Hazardous exposure may occur when product is overheated, oxidized or otherwise processed or damaged to create dust, vapor or fumes.

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141-04 14th Avenue, Whitestone, New York 11357, USA.



Routes of Entry:

Inhalation: Sulfuric Acid vapors or mist may cause severe respiratory irritation. Lead dust or fumes may cause irritation of upper respiratory tract or lungs.

Skin Contact: Sulfuric Acid may cause severe irritation, burns and ulceration. Lead Compounds are not readily absorbed through the skin.

Eye contact: Sulfuric Acid may cause severe irritation, burns and cornea damage and possible blindness. Lead Compounds may cause eye irritation.

Ingestion: Sulfuric Acid may cause severe irritation of mouth, throat, esophagus and stomach. Lead Compounds may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. Acute ingesting should be treated by physician.

Warning: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals may cause cancer and reproductive harm. Wash hands after handling.

SECTION 4 - FIRST AID MEASURES

Emergency and First Aid Procedures: Contact with internal components if battery is opened/ broken.

Inhalation: Remove to fresh air. Give oxygen or artificial respiration if needed. Get immediate medical attention.

Eye Contact: Flush with plenty of water for at least 15 minutes, hold eyelids open. Get immediate medical attention.

Skin Contact: Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes and obtain medical attention if necessary.

Ingestion: Do not induce vomiting. Dilute by giving large quantities of water. If available give several glasses of milk. Do not give anything by mouth to an unconscious person. Give CPR if breathing has stopped. Get immediate medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

Flash Point: Not Applicable

Extinguishing Media: Dry Chemical, Foam or Carbon Dioxide.

Special Fire Fighting Procedures: If batteries are on charge, turn off power. Use positive pressure, self-contained breathing apparatus in fighting fire. Water applied to electrolyte generates heat and causes it to splatter. Wear acid resistant clothing. Ventilate area well.

Unusual Fire and Explosion Hazards: Hydrogen and oxygen gases are generated in cells during normal battery operation or when on charge. (Hydrogen is flammable and oxygen supports combustion). These gases enter the air through the vent caps. To avoid risk of fire or explosion, keep sparks and other sources of ignition away from the battery. Do not allow metal objects to simultaneously contact both positive and negative terminal of batteries. Ventilate area well.



SECTION 6 - ACCIDENTAL RELEASE MEASURES

Steps to be taken in case of broken battery case or electrolyte leakage:

Neutralize any spilled electrolyte or exposed battery parts with soda ash or sodium bicarbonate until fizzing stops. PH should be neutral at 6-8. Collect residue and place in a suitable container. Dispose of clean-up materials as a hazardous waste. When neutralized, the spill is non-hazardous. Keep untrained individuals away from the spilled material. Place the broken battery in a heavy gauge plastic bag or other non-metallic container. Provide adequate ventilation, hydrogen gas may be given off during neutralization.

SECTION 7 - HANDLING AND STORAGE

Handling: It can be use normally under the temperature of $-15\sim 50^{\circ}\text{C}$. All connections should be connected accurately to avoid the possibility of shorting connections. Do not let oil and water or other contaminations drop on the top of battery while working. Be sure to have logical discharge electricity and terminate voltage setting while working.

Use only in the well-ventilated areas. Keep away from heat, sparks and open flames.

Make available in the work area emergency shower and eyes wash.

Avoid contact with skin and eyes.

Use of full length sleeves and pants; boots or work shoes are recommended for manufacturing operations.

Storage: Store in cool ($15\sim 30^{\circ}\text{C}$), dry, well ventilated area and away from combustible materials, sources of ignition, excessive heat and direct sunlight. Do not store in sealed areas. Avoid overheating and overcharging. The storage battery should be maintained periodical when storage, it should be electricized and discharged one time every three months.

Other Precautions: Do not charge in unventilated areas. Do not use organic solvents or other than recommended chemical cleaners on battery.

Warning: Not for use on children under 5 years old.

SECTION 8 - EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit:

Lead, Lead Compounds (Chronic poison):

OSHA - PEL 0.05 mg/m^3

ACGIH - TLV 0.05 mg/m^3

NIOSH - REL $<0.10\text{ mg/m}^3$

Sulfuric Acid (suspected human carcinogen for sulfuric acid contained in strong inorganic acid):

OSHA - PEL 1 mg/m^3 (TWA)

ACGIH - TLV 1 mg/m^3 (TWA), 3 mg/m^3 (STEL)

NIOSH - REL 1.0 mg/m^3



Respiratory Protection (Specify Type):

Provide general dilution ventilation to keep exposure to vapors as low as possible. Can wear the mask for organic solvent when get in touch with high density of vapor.

Ventilation:

LOCAL EXHAUST: Good general ventilation should be used. Use local exhaust ventilation as needed so that exposure limits are met.

MECHANICAL (GENERAL): Provide general ventilation in possessing and storage areas so that exposure limits are met.

Engineering Controls: General room ventilation is sufficient during normal use and handling. Do not install these batteries in sealed, unventilated areas.

Personal Protective Equipment (In the Event of Battery Case Breakage):

Hand protection: Rubber or neoprene gloves.

Skin and Body Protection: Wear acid resistant boots, apron or clothing. Use decontamination facilities (eye bath, safety shower, washing facilities).

Protective Gloves: Rubber or neoprene gloves.

Eye Protection: Safety glasses with side shields and avoid eye contact.

Other Protective Clothing or Equipment: Protective clothing is required where repeated or prolonged skin contact may occur.

Work/Hygienic Practices: Remove jewelry, rings, watches and any other metallic objects while working on batteries. All tools should insulate to avoid the possibility of shorting connections. DO NOT lay tools on top of battery. Be sure to electricity from tools and individual person by touching a grounded surface in the vicinity of the batteries, but are heavy. Serious injury can result from improper lifting or installation. DO NOT lift, carry, install or remove pulling the terminal posts for safety reasons and because terminal posts and post seals may be damaged. Clothes or overalls as they can create static electricity. DO KEEP a fire extinguisher and emergency communications the work area.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

General Physical Form: The battery is solid. Sulfuric Acid is a liquid.

Odor: The battery is odorless.

Solubility in Water: Lead, Lead Oxide and Lead Sulfate are insoluble in water. Sulfuric Acid is 100% soluble in water.

SECTION 10 - STABILITY AND REACTIVITY

Stability: Stable under normal conditions.

Conditions to Avoid: Sparks and other sources of ignition. Prolonged overcharge. Fire or explosion hazard due to possible hydrogen gas generation.



Incompatibility: Combination of sulfuric acid with combustibles and organic materials may cause fire and explosion. Avoid strong reducing agents, most metals, carbides, chlorates, nitrates, picrates.

Hazardous Decomposition Products: Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. CO, CO₂ and sulfur oxides may emit in fire.

Hazardous Polymerization: Hazardous polymerization will not occur.

SECTION 11 - TOXICOLOGICAL INFORMATION

Sulfuric acid:

Inhalation, mouse: LC50 = 320 mg/m³/2h

Inhalation, rat: LC50 = 510 mg/m³/2h

Oral, rat: LD50 = 2140 mg/kg (25% Solution)

Carcinogenicity: ACGIH: A2 - Suspected Human Carcinogen

OSHA: Select carcinogen

IARC: Group 1 carcinogen

Epidemiology:

Workers exposed to industrial sulfuric acid mist showed a statistical increase in laryngeal cancer. This data suggests a possible relationship between carcinogenesis and inhalation of sulfuric acid mist.

SECTION 12 - ECOLOGICAL INFORMATION

Ecotoxicity:

Sulfuric acid is harmful to aquatic life in very low concentrations. It may be dangerous if it enters water intakes. The aquatic toxicity for bluegill in fresh water was 24.5 ppm/24 hr, which was lethal.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste Disposal Method:

Neutralized acid may be flushed down the sewer. Spent batteries must be treated as hazardous waste and disposed of according to local state, and federal regulations. A copy of this material safety data must be supplied to any scrap dealer or secondary smelter with battery.

SECTION 14 - TRANSPORT INFORMATION

Identification and Proper Shipping Name:

Batteries – Wet, Non-Spillable, Electric Storage, UN 2800.



DOT: Unregulated, meets the requirements of 49 CFR 173, 159 (d).

IATA/ICAO: Unregulated, meets the requirements of Special Provision A67.

IMO: Unregulated.

Label: "Non-Spillable" or "Non-Spillable Battery."

UN/NA Number: UN2800

***For all modes of transportation, each battery and outer package must be labeled: "Non-Spillable" or "Non-Spillable Battery." This label must be visible during transportation.**

Follow all regulations in your country.

SECTION 15 - REGULATORY INFORMATION

Sulfuric Acid:

EC# 231-639-5 CAS# 7664-93-9 Annex I Index# 016-020-00-8

NFPA Hazard Rating:

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

This chemical substance is not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances.).

Risk phrases: R23 R24 R25 R35 R36 R37 R38 R49.

Safety phrases: S23 S30 S36 S37 S39 S45.

Lead:

CAS# 7439-92-1 EC# 231-100-4

Risk phrases: R23 R25

This chemical substance is not classified in the Annex I of Directive 67/548/EEC.

This chemical substance is not listed in a priority list (as foreseen under Council Regulation (EEC) No 793/93 on the evaluation and control of the risks of existing substances.).

SECTION 16 - OTHER INFORMATION

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. RJS Standard Testing & Certification Center shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. License granted to make unlimited paper copies for internal use only.

NOTE

This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. RJS Standard Testing & Certification Center makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating there to. The data is offered solely for your consideration, investigation, and verification. RJS Standard Testing & Certification Center assumes no legal responsibility for use or reliance upon this data.