MATERIAL SAFETY DATA SHEET
MSE VALVE REGULATED LEAD ACID BATTERY SERIES
Non Spillable SLA Battery

Section II: Hazardous Ingredients /Identity Information

Component	Common Name	Chemical Name	Approximate % by wt.or vol.	OSHA PEL	ACGIH TLV	CAS#
Lead	negative Electrode and Grid	Pb	48~ 53 wt%	0.05 mg/m^3	0.15 mg/m^3	7439-92-1
Lead Oxide	Positive Electrode	Pb0	23~26%	0.05 mg/m^3	0.15 mg/m^3	1317-36-8
Lead Sulfate	Positive and Negative Electrode	$PbSO_4$	< 1 wt%	0.05 mg/m^3	0.15 mg/m^3	7446-14-2
SulfuricAcid	Electrolyte	H_2S04	7~ 10wt%	1.0 mg/m^3	1.0mg/m^3	7664-93-9

Note:Valve Regulated Lead Acid batteries are a non-spillable design.Under normal use and handing the customer has on contact with the internal components of the battery or the chemical hazards.under normal use and handling these batteries do not emit regulated or hazardous substances. Warning:Battery terminals/Posts and related accessories contain lead and lead compounds ,chemicals known to the state of California to cause cancer and reproductive harm.The only possible exposure would be the terminal posts on MSE models 150,200 and300.MSE models 500 through 1440 do NOT have lead terminal posts,but are tin-plated brass terminal posts.Wash hands thoroughly after working with batteries and before eating,drinking or smoking.

Section III: Physical/ Chemical Characteristics

Boiling Point: Electrolyte 110℃-112℃
Vapor Pressure: Electrolyte 11.7 mm Hg at 20℃
Vapor Density(AIR=1) : Electrolyte 3 4
Solubility in Water: Lead,Lead Oxide and Lead Sulfate are insoluble in water .Sulfuric Acid is 100%Soluble in Water.
Appearance and Odor: The entire battery is a solid article consisting of an opaque plastic case with two protruding lead terminals or tin-plated brass terminals.the battery is odorless .sulfuric Acid is a liquid
Specific Gravity(H20=1) : Electrolyte 1.300

Health Hazard Information(Acute and Chronic) –Sulfuric Acid only.

The International Agency for Research On Cancer(IARC) has classified"strong inorganic acid mist containing sulfuric acid "as a Category I carcinogen,a substance that is carcinogenic to humans.This classification does not apply to liquid forms sulfuric acid or sulfuric acid solutions contained within the battery .Inorganic acid mist (sulfuric acid mist)is not generated under normal use of this product .Misuse of the product ,such as overcharging,may however result in the generation of sulfuric acid mist .

Routes of Entry: By inhalation(mist),skin and eyes ,ingestion.
Acute: Tissue destruction on contact.May cause 2nd and3rd degree burns or blindness.Ingestion will cause corrosive burns on contact .May be fatal if swallowed.
Chronic: Inhalation of mists may cause upper respiratory irritation.
Sign and Symptoms: Irritation and burning of exposed tissues.
Medical Conditions: Respiratory disorders may be aggravated by prolonged inhalation of mists.

Section IV: Emergency and First Aid Procedures

Battery Electrolyte

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. **Get immediate medical attention.**
Skin Contact: Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes.
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 V: Fire and Explosion Hazard Data

Flash Point: Not Applicable

Flammable Limits: Lower 4.10% (Hydrogen gas) Upper 74.20%

Extinguishing Media: Dry chemical, foam, halon or $C0_2$

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 during battery overcharging. 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 VI: Reactivity Data

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, pirate.

Hazardous Decomposition Products: Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. CO, $C0_2$ and sulfur oxides may emit in fire .

Hazardous polymerization will not occur.

Section VII: Precautions for Safe Handling and Use

Steps to be Taken in Case of Broken Battery Case or Electrolyte Leakage:

Neutralize any electrolyte or exposal internal battery parts with soda ash (sodium bicarbonate) until fizzing stops. Keep untrained personnel away from electrolyte and broken battery. Place broken battery and clean-up materials in a plastic bag or non-metallic container. Dispose of clean-up materials as a hazardous waste. Ventilate area as hydrogen gas may be given off during neutralization.

Waste Disposal Method:

Federal and State laws prohibit the improper disposal of all lead acid batteries. The battery end users (owners) are responsible for their batteries from the date

of purchase through their ultimate disposal. The only legally accept able method of disposal of lead acid batteries is to recycle them at a Resource Conservation and Recovery Act (RCRA) approved secondary lead smelter. The Huaxiang SAV-LEAD Recycling Program allows for the recycling of lead-acid batteries in an environmentally sound manner.These batteries are chemically identical to common automotive starter batteries and can be recycled with automotive lead-acid batteries.

HAZARDOUS WASTE CODES: D002, D008

Precautions to be Taken in Handling, Storing and Transportation:

Store in cool, dolt area away from combustible materials. Do not store in sealed, unventilated areas. Avoid overheating and overcharging.

Other Precautions:

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

Section VIII:Control Measures/Personal Pretection

General:

Normal room ventilation is sufficient during normal use and handling.recommend 2 to 3 room air changes per hour to prevent buildup of hydrogen gas.

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

Always wear safety glasses with side shields or full face shield.

Use rubber or neoprene gloves.

Wear acid resistant boots,apron or clothing.

Work/Hygienic Practices

Remove jewelry,rings,watchs and any other metallic objects while working on batteries.all tools should be adequately insulated to avoid the possibility of shorting connections .DO NOT lay tools on top of battery. be sure to discharge static electricity from tools and individual person by touching a grounder surface in the vicinity of the batteries,but away from cells.batteries are heavy.serious injury can result from improper lifting or pulling the terminal posts for safety reasons and because terminal posts and post seals may be damaged.DO NOT lift,carry,install or remove cells by wear nylon clothes orveralls as they can create static electricity ,DO KEEP a class"C"fire extinguisher and emergency communications device in the work area.

IMPORTANT

Wash hands thoroughly after working with batteries and before eating, drinking or smoking.

Section IX:Regulatory Information

NFPA Hazard Rating for Sulfuric Acid

Flammability(red)=0 Health(blue)=3 Reactivity(yellow)=2

Section X:Transportation Information
DOT-Unregulated ,meets the requirements of 49 CFR173,159(d).
IATA/ICAO-Unregulated,meets the requirements the requirements of Special Provision A67.
IMO-Unregulated,IMDG-Unregulated,meets the requirements of Special Provision 29&238.
IMPORTANT:
For all modes of transportation,each battery and outer package must be labeled:"Non-Spillabe"or NON-Spillable Battery."this label must be visible during transportantion.Batteries must be securely packed to prevent short circuiting.

Section XI:california Proposition 65 information
The state of califonia has determined that certain battery terminals contain lead and lead compounds,and handing this product may also expose you to sulfuric acid mist ,chemicals known to the state of California to cause caner and reproductive harm.The only possible exposure would be the terminal posts on ,MSE model 150.200 and 300.MSE model 500 through 1440 do **NOT** have lead terminal posts,but are tin-plated brass terminal posts.
IMPORTANT:WASH HANDS THOROUGHLY AFTER WORKING WITH BATTERIES AND BEFORE EATING, DRINKING OR SMOKING.

Section XII:other information
MSE Valve Regulated,Lead-Acid(VRLA)Battery Electrolyte Data for Environmental Reporting Poises Emergency Planning and Community Right-to-know Act of 1986（EPCRA）.

MSE batteries are manufactured using lead,CAS,No 7439-92-1 and Electrolyte (sulfuric acid)CAS No 7664-93-9,which are subject to the reporting requirements of the Emergency Planning and Community Right-to-Know Act of 1986(EPCRA), EPCRA is intended to provide the public with information about hazardous substances in their communities and to assist in establishing emergency response plan for chemical accidents.Section 302 requires notification if you have more than 1000lbs.of sulfuric acid ,section 304 says that the Reportable Quantity for a spill is 1000 lbs,for sulfuric acid CERCLA also has a 1000lb,spill reporting requirement.Section 312 requires Annual inventory reporting one Tier II form if you have 500lbs. of sulfuric or 10000lbs .of lead Section 313 requires Toxic Chemical Release Inventory Form R reporting if you have more than 10000lbs .of sulfuric acid or 100 lbs. of lead.
The quantity of electrolyte sulfuric acid and lead will vary by MSE battery model. Consult the table on page 4 for MSE model number and corresponding information.
NOTE: Battery electrolyte is a mixture of sulfuric acid and water.Only the amount of 100% sulfuric acid must be counted in the reportable quantity.