



## Universal Power Group

### MATERIAL SAFETY DATA SHEET SLA VALVE REGULATED LEAD ACID BATTERY SERIES

#### SECTION I: Chemical Product and Company identification

Product Identity: VRLA Lead Acid Battery

Manufacturer:

Min'an Administrative Zone, Nantou Town, Zhongshan City, Guangdong, China

Telephone Number: 866.892.1122

Fax Number: 469.892.1123

#### SECTION II: Hazardous Ingredients/Identify Information

Component	Common Name	Chemical Name	Approximate % by wt. or vol.	OSHA PEL	ACGIH TLV
Lead	(negative Electrode and Grid)	Pb	48~53wt%	0.05mg/m <sup>3</sup>	0.15mg/m <sup>3</sup>
Lead Oxide	(Positive Electrode)	PbO <sub>2</sub>	23~26%	0.05mg/m <sup>3</sup>	0.15mg/m <sup>3</sup>
Lead Sulfate	(Positive and Negative Electrode)	PbSO <sub>4</sub>	<1.wt%	0.05mg/m <sup>3</sup>	0.15mg/m <sup>3</sup>
Sulfuric Acid	(Electrolyte)	H <sub>2</sub> SO <sub>4</sub>	7~10wt%	1.0mg/m <sup>3</sup>	1.0mg/m <sup>3</sup>

Percentages of components are dependant both on the model of the battery and state of charge/discharge of the battery.

Reportable Quantity: 500lbs for sulfuric acid and 10000 lbs for lead. See Section XI, Page 3 for more information.

Overall Chemical Reaction:  $PbO_2 + Pb + 2H_2SO_4 = 2PbSO_4 + 2H_2O$

Note: Universal Valve Regulated Lead Acid batteries are a non-spillable design. Under normal use and handling the customer has no 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 China to cause cancer and reproductive harm.

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

#### SECTION III: Physical/ Chemical Characteristics

<b>Boiling Point:</b>	Electrolyte 110°C -112°C
<b>Vapor Pressure:</b>	Electrolyte 11.7mm Hg. At 20°C
<b>Vapor Density(AIR=1):</b>	Electrolyte 3.4
<b>Solubility in Water:</b>	Lead, lead Oxide and Lead Sulfate are insoluble in water. Sulfuric Acid is 100% soluble in water.
<b>Appearance and Odor:</b>	The entire battery is a solid article consisting of an opaque plastic case with two protruding lead terminals. The battery is odorless. Sulfuric Acid is a liquid.
<b>Specific Gravity(H<sub>2</sub>O=1):</b>	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 of 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.

MATERIAL SAFETY DATA SHEET  
SLA VALVE REGULATED LEAD ACID BATTERY SERIES

---

<b>Routes of Entry:</b>	By inhalation (mist), skin and eyes, ingestion.
<b>Acute:</b>	Tissue destruction on contact. May cause 2nd and 3rd degree burns or blindness. Ingestion will cause corrosive burns on contact. May be fatal if swallowed.
<b>Chronic:</b>	Inhalation of mists may cause upper respiratory irritation.
<b>Signs and Symptoms:</b>	Irritation and burning of exposed tissues.
<b>Medical Conditions:</b>	Respiratory disorders may be aggravated by prolonged inhalation of mists.

---

SECTION IV: Emergency and First Aid Procedures

**Battery Electrolyte**

<b>Inhalation:</b>	Remove to fresh air. Give oxygen or artificial respiration if needed. Get immediate medical attention.
<b>Eye contact:</b>	flush with plenty of water for at least 15 minutes. Get immediate medical attention.
<b>Skin Contact:</b>	Remove contaminated clothing and flush affected areas with plenty of water for at least 15 minutes.
<b>Ingestion:</b>	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

<b>Flash Point:</b>	Not Applicable
<b>Flammable Limits</b>	Lower 4.10% (hydrogen gas) Upper 74.20%
<b>Extinguishing Media:</b>	Dry chemical, foam, halon or CO <sub>2</sub> .

**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

<b>Stability:</b>	Stable under normal conditions.
<b>Conditions to Avoid:</b>	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, picrate.

**Hazardous Decomposition Products:** Hydrogen gas may be generated in an overcharged condition, in fire or at very high temperatures. CO, CO<sub>2</sub> 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 Case or Electrolyte Leakage:**

Neutralize any electrolyte or exposed 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:**

National 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 acceptable method of disposal of lead acid batteries is to recycle them at a Resource Conservation and Recovery Act approved secondary lead smelter. The Universal 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.

MATERIAL SAFETY DATA SHEET  
SLA VALVE REGULATED LEAD ACID BATTERY SERIES

**Precautions to be Taken in Handling, Storing and Transportation:**

Store in cool, dry 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 Protection

**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, watches 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 grounded surface in the vicinity of the batteries but away from cells. Batteries are heavy. Serious injury can result from improper lifting or installation. DO NOT lift, carry, install or remove cells by lifting or pulling the terminal posts for safety reasons and because terminal posts and post seals may be damaged. DO NOT wear nylon clothes or overalls as they can create static electricity. DO KEEP a 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

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. Battery must be securely packed to prevent short-circuiting.

---

SECTION XI: Other Information-Notice to Readers

**General Product Description-Universal VRLA Batteries**

Universal VRLA Batteries are valve regulated non-spillable lead-acid batteries with pasted lead-calcium plates. The electrolyte is held captive in an Absorbed Glass Mat (AGM) separator between plates that immobilize the electrolyte in the cell. AGM separator material is a highly porous, absorbent micro fiberglass mat mixed with polymer fibers. There is no "free" electrolyte to leak out if the cell is tipped over (cell case and cover are sealed together) or if the cell is punctured. The AGM separator material immobilizes the electrolyte and creates a situation where the spill of electrolyte is highly unlikely. Typical accidents where a battery case is punctured results in a slight drip or a slow ooze of material out of the cell that cannot be characterized as a spill.

Universal VRLA Batteries are also different from conventional unsealed (wet/flooded) cells because they contain only a minimum amount of electrolyte. VRLA battery electrolyte is a dilute mixture of sulfuric acid in water, which typically has a specific gravity between 1.270 and 1.3. Specific Gravity is a measure of the density of a liquid as compared to that of water, which has a specific gravity of 1.000. Pure sulfuric acid has a specific gravity of 1.835.

MATERIAL SAFETY DATA SHEET  
SLA VALVE REGULATED LEAD ACID BATTERY SERIES

**NOTE: Universal VRLA Batteries do not contain a gel electrolyte.**

During normal battery installation, operation and maintenance, the user has NO contact with the internal components of the battery or its internal hazardous chemicals.

Universal VRLA batteries are UL recognized under the file number: Zhongshan Hengli Electronic Appliance factory, file#MH27774.

**NOTICE TO READERS: DISCLAIMER**

This information has been compiled from sources considered to be dependable and is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty (either expressed or implied) or guarantee is made to the accuracy, reliability or completeness of the information contained herein. This information relates to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. It is the user's responsibility to satisfy himself as to the suitability and completeness of this information for his own particular use. Zhongshan Hengli Electronic Appliance Factory does not accept liability for any loss or damage that may occur, whether direct, indirect, incidental or consequential, from the use of this information nor do we offer warranty against patent infringement. Cell and battery product or information contained herein are subject to change without notice. No liability is assumed as a result of their use or application.

**MSDS Preparaton Date: 01/2010**