

SAFETY DATA SHEET - LEAD BATTERIES

THAIHUAWEI BATTERY CO.,LTD
 MATERIAL SAFETY DATA SHEET
 UPS BATTERIES

(VALVE REGULATED LEAD ACID BATTERY SERIES)

Section I: Chemical Products and Company Identification

Product Identity: UPS BATTERIES (VRLA lead Acid Battery) Trade
 Name: UPS BATTERIES (Valve Regulated Lead Acid Battery)

Manufacturer:

Thaihuawei Battery Co.,Ltd

Hemaraj Chonburi Industrial Estate **88/1-3,Moo.8,T.Bo Win**,Sri Racha District,
 Chonburi Province,Thailand,Postcode 20230

www.thaihuaweibattery.com

Section II : Hazardous Ingredients / Identity Information

Component	Common name	Chemical Name	Approximate OSHA wt. or vol.	% by PEL	ACGIH TLV	CAS#
Lead	Negative Electrode and Grid		48-53	0.05	0.15 mg/m ³	7439-92-1
Lead Oxide	Posttive Electrode	PbO	23-26	0.05 mgfrn ^a	0.15 mg/m ³	1317-36-8
Lead Sulfate	Positive and Negative Electrode	PbSO4	< 1. wt ^o /o	0.05 mg/m ³	0.15 mg/m ³	7446-14-2
Sulfuric Acid	Electrolyte		7-10	1.0 mg/m ³	1.0 mg/m ^a	7664-93-9

Percentages of components are dependant both on the model of the battery and state of charge/
 discharge of the battery. Sulfuric Acid and Lead are reportable under Sections 302, 311, 312 and
 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (40 CFR 355
 and 372). Reportable Quantity: 500 lbs for sulfuric acid and 10,000 lbs of lead. See Section XII,
 Page 5 for more information.

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

Note: 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/ports 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 could
 be the terminal posts on models 150, 200 and 300. Models 500 through 1440 do NOT have lead terminal

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posts, but are tin-plated brass terminal posts. Wash hands thoroughly after working with batteries and before eating, drinking or smoking.

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III Physical Chemical Characteristics

Boiling Point: Electrolyte 1 IOC - 121 C

Vapor Pressure: Electrolyte 117 mm Hg. at 120°C

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 of tin-plated brass terminals. The battery is odorless. Sulfuric Acid is a liquid.

Specific Gravity (H₂O = 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 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.

Section IV : Identification of Dangers

Routes of Entry: By inhalation (mist), skin and eyes, ingestion.

Acute: 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. Chronic:

Inhalation of mists may cause upper respiratory irritation.

Signs and Symptoms: Irritation and burning of exposed tissues.

Medical Conditions: Respiratory disorders may be aggravated by prolonged if inhalation of mists.

Section V : 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.

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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 VI : Handling and Storage

Handling: Use the handle if any, otherwise carefully lift the container from underneath.

Precautions: The batteries contain dilute sulphuric acid. Prevent any risk of short-circuit between the battery terminals.

Recommendations for use: Handle with care. Never lift batteries by their terminals.

Storage temperature: Min. Max. +40C

Shelf life in normal storage conditions : 12 months at 20C.

REV/SEO

VII Fire and Explosion Hazard Data

Flash Point: Not Applicable

Flammable Limits: Lower 4.10% (Hydrogen gas) Upper 74.90% Extinguishing

Media: Dry chemical, foam, halon or CO₂

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 VIII : Reactivity Data

Stability: Stable under normal conditions.

Conditions to Avoid: Sparks and other sources of ignition. Prolonged overcharge. Fire and 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, nitrate, picrate.

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

Hazardous polymerization will not occur.

Steps to be taken In Case of Broken Battery Case or Electrolyte Leakage.

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Section IX : Precautions for Safe Handling and Use

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 cleanup 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 user (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 (RCRA) approved secondary lead smelter. The Huawei SAV-LEAO 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.

IX Precautions for Safe Handling and Use

HAZAROUS WASTE CODES: 0002, 0008.

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 overcharging .Other Precautions:

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

Section X : Control Measures I 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 side 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 possibility of shorting connections. DO NOT lay tools on top of battery. Be sure of 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 class C fire extinguisher and emergency communications device in the work area .IMPORTANT:

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

Section XI : Regulatory Information

NFPA Hazard Rating for Sulfuric Acid

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

Section XII : Elimination

Disposal:

Neutralise the acid using alkaline agents (lime, sodium carbonate, soda) Dispose of the neutralised acid, respecting current regulations. Batteries should be disposed off separately with view to recycling.

Soiled packaging materials/ Neutralise the acid and rinse the materials before disposal.

Section XIII : Transportation Information

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

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

IMO - Unregulated IMDG• Unregulated, meets the requirements of Special Provision 29&238.

IMPORTANT:

For all models of transportation, each battery and outer package must be labeled. «NonSpillable» or «Non-Spillable Battery». This label must be visible during transportation. Batteries must be securely packed to prevent short circuiting.

Section XIV : California Proposition of Information

The State of California has Determined that certain battery terminals contain lead and lead compounds, and handling this product may also expose you to sulfuric acid mist, chemicals known to the State of California to cause cancer and reproductive harm- The only possible exposure would be the terminal posts on models 150, 200 and 300- Models 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 XV : Other Information

Valve Regulated, Lead-Acid (VRLA) Battery Electrolyte Data for Environmental Reporting Purposes Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA). 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 plans for chemical accidents. Section 302 requires notification if you have more than 1 t000 lbs. of sulfuric acid. Section 304 says that the Reportable Quantity for a spill is 1 t000 lbs. for sulfuric acid. CERCLA also has a 1 ,000 lb. spill reporting requirement Section 312 requires Annual Inventory Reporting on a Tier II form if you have 500 lbs. of sulfuric or 10,000 lbs of lead. Section 313 requires Toxic Chemical Release Inventory form R reporting if you have more than 10,000 lbs of sulfuric acid or 100 lbs of lead.

The quantity of electrolyte, sulfuric acid and lead will vary by battery model. Consult table on page 5 for model number and corresponding information-

NOTE: Battery electrolyte is a mixture of sulfuric acid and Only the amount of 100% sulfuric acid must be counted in the reportable quantity.

Section XVI : VRLA Battery Range

12V0.8Ah, 12V1.3Ah, 12V2Ah, 12V2.2Ah, 12V2.3Ah, 12V2.5Aht 12V3Ah, 12V3.3Ah, 12V3.5Ah,

12V4Ah, 12V4.5Ah, 12V5Ah, 12V5.5AH, 12V6Ah, 12V6.5Ah, 12V6.8Ah, 12V7Ah, 12V7.2Ah,

12V7.5Ah, 12V8Ah, 12V8.6Ah, 12V9Ah, 12V9.5Ah, 12VIOAh, 12V11Ah, 12V11.2Ah, 12V12Ah, 12V13Ah, 12V14Ah, 12V15Ah, 12V16Ah, 12V17Ah, 12V18Ah, 12V19Ah, 12V20Ah, 12V21Ah, 12V24Ah, 12V26Ah, 12V28Ah, 12V30Ah, 12V33Ah, 12V38Ah, 12V40Ah, 12V42Ah, 12V45Ah.

12V50Ah, 12V65Ah, 12V75Ah, 12V85Ah, 12V90Ah, 12VIOAh, 12V105Ah, 12V120Ah, 12V125Ah, 12V150Ah, 12V160Ah, 12V175Ah, 12V180Ah, 12V200Ah, 12V220Ah, 12V225Ah, 12V230Ah, 12V250Ah, 12V22Ah, 12V35Ah, 12V11 OAh

General Product Description ^a- VRLA Batteries

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

VRLA batteries are also different from conventional vented (flooded cells) because they contain only a minimum amount of electrolyte. The largest size cell, 1440, contains only 4.07 gallons of 1.310 specific gravity electrolyte. Of those 4.07 gallons of electrolyte, only 1.209 gallons is 100% sulfuric acid. EPCRA reporting requires that only amount (gallons) of 100% sulfuric acid is reportable,

VRLA battery electrolyte is a dilute mixture of sulfuric acid in water, which typically has a specific gravity between 1.270 and 1.300. Specific Gravity (SpGr) is a measure of the density of a liquid as compared to that of water, which has Sp.Gr. of 1.0. Pure sulfuric acid has a specific gravity of 1.835.

NOTE: 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 chemical

Batteries are UL recognized under the following file number: Underwriters Laboratories, Inc, Inc.

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