



# Huafu High Technology Energy Storage Co., LTD

Battery Industrial Park of Gaoyou, Gaoyou Economic Development Zone, Yangzhou City, Jiangsu, China

Tel 0514-84540810

Fax 0514-84540807

## MATERIAL SAFETY DATA SHEET

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### SECTION 1: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Valve-regulated lead-acid batteries

Manufacturer: Huafu High Technology Energy Storage Co., LTD

Address: Battery Industrial Park Gaoyou, Economic Development Zone, Gaoyou City, Jiangsu, China

Telephone: 0514-85081971

Effective Date: January 1<sup>st</sup>, 2023

### SECTION 2: HAZARDOUS COMPONENTS

COMPONENTS		CAS Number	%WEIGHT	TLV	LD50 ORAL	LC50 INHALATION	LC50 CONTACT
Lead compounds	Lead	7439-92-1					
	Lead Dioxide	1309-60-0	About 70%	N/A	(500) mg/Kg	N/A	N/A
	Lead Sulfate	7446-14-2					
Sulfuric Acid		7664-93-9	About 20%	1 mg/m <sup>3</sup>	(2.140) mg/Kg	N/A	N/A
Fiberglass Separator		N/A	About 5%	N/A	N/A	N/A	N/A
ABS		9003-56-9	About 5%	N/A	N/A	N/A	N/A

### SECTION 3: HAZARDS IDENTIFICATION

Do not open battery. Avoid contact with internal components. Internal components include lead and gelatinous electrolyte.

**Electrolyte** - Electrolyte is corrosive and contact may cause skin irritation and chemical burns. Electrolyte causes severe irritation and burns of eyes, nose and throat. Ingestion can cause severe burns and vomiting.

**Lead** - Direct skin or eye contact may cause local irritation. Inhalation or ingestion of lead dust or fumes may result in headache, nausea, vomiting, abdominal spasms, fatigue, sleep disturbances, weight loss, anemia and leg, arm and joint pain.

### SECTION 4: FIRST-AID MEASURES

#### Inhalation:

Sulfuric Acid: Remove to fresh air immediately. If breathing is difficult, give oxygen.

Lead: Remove from exposure, gargle, wash nose and lips; consult physician.

#### Ingestion:

Sulfuric Acid: Give large quantities of water; do not induce vomiting; consult physician.

Lead: Consult physician immediately.

#### Skin:

Sulfuric Acid: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes. Lead: Wash immediately with soap and water.

#### Eyes:

Sulfuric Acid and Lead: Flush immediately with large amounts of water for at least 15 minutes; consult physician.





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### SECTION 5: FIRE FIGHTING MEASURES

COMPONENTS	FLASH POINT	EXPLOSIVE LIMITS	COMMENTS
Lead	None	None	
Sulfuric Acid	None	None	
Hydrogen	259°C	4% - 74.2%	Batteries can emit hydrogen only if over charged (Floating voltage > 2.4 V PC). The gas enters the air through the vent caps. To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery. Extinguishing Media: Dry chemical, foam, CO <sub>2</sub> .
Fiberglass Sep.	N/A	N/A	Toxic vapors may be released. In case of fire: wear self-contained breathing apparatus
478 Polystyrene	None	N/A	Temperatures over 300 °C (572°F) may release combustible gases. In case of fire: wear positive pressure self-contained breathing apparatus.

### SECTION 6: ACCIDENTAL RELEASE MEASURES

Avoid contact with any spilled material. Contain spill, isolate hazard area, and deny entry. Limit site access to emergency responders. Neutralize with sodium bicarbonate, soda ash, lime or other neutralizing agent. pH should be at neutral 6-8. Provide adequate ventilation. Heat, carbon dioxide and hydrogen gas may be given off during neutralization.

Place battery in suitable container for disposal. Dispose of contaminated material in accordance with applicable local, state and federal regulations. Sodium bicarbonate, soda ash, sand, lime or other neutralizing agent should be kept on-site for spill remediation.

Place the broken battery in a heavy-duty plastic bag or other non-metallic container. Properly recycle all battery residue and parts.

### SECTION 7: HANDLING AND STORAGE

1. Store lead/acid batteries with adequate ventilation. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space.
2. Do not remove vent caps. Follow shipping and handling instructions that are applicable to the battery type. To avoid damage to terminals and seals, do not double-stack industrial batteries.

#### STEPS TO TAKE IN CASE OF LEAKS OR SPILLS

If sulfuric acid is spilled from a battery, neutralize the acid with sodium bicarbonate (baking soda), sodium carbon (soda ash), or calcium oxide (lime).

Flush the area with water discard to the sewage systems. Do not allow un-neutralized acid into the sewage system.

#### 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





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secondary smelter with battery.

### ELECTRICAL SAFETY

Due to the battery's low internal resistance and high power density. High levels of short circuit can be developed across the battery terminals. Do not rest tools or cables on the battery. Use insulated tools only.

Follow all installation instruction and diagrams when installing or maintaining battery systems.

## SECTION 8: Exposure Control/Personal Protection

EXPOSURE	PROTECTION	COMMENTS
SKIN	Rubber gloves, Apron, Safety shoes	Protective equipment must be worn if battery is cracked or otherwise damaged.
RESPIRATORY	Respirator (for lead)	A respirator should be worn during reclaim operations if the TLV exceeded.
EYES	Safety goggles, Face Shield	

## SECTION 9: PHYSICAL/CHEMICAL PROPERTIES

COMPONENTS	DENSITY	MELTING POINT	SOLUBILITY (H <sub>2</sub> O)	ODOR	APPEARANCE
Lead	11.34	327.4°C (Boiling)	None	None	Sliver-Gray Metal
Lead Sulfate	6.2	1070°C (Boiling)	40 mg/L(15°C)	None	White Powder
Lead Dioxide	9.4	290°C (Boiling)	None	None	Brown Powder
Sulfuric Acid	About 1.3	About 114°C (Boiling)	100%	Acidic	Clear Colorless Liquid
Fiberglass Sep.	N/A	N/A	Slight	Toxic	White Fibrous Glass
ABS or PP	N/A	N/A	None	No Odor	Solid

## SECTION 10: STABILITY AND REACTIVITY

COMPONENT	Lead/lead compounds
STABILITY	Stable
INCOMPATIBILITY	Potassium, carbides, sulfides, peroxides, phosphorus, sulfurs.
DECOMPOSITION PRODUCTS	Oxides of lead and sulfur.
CONDITIONS TO AVOID	High temperature, Sparks and other sources of ignition
COMPONENT	Sulfuric Acid





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STABILITY	Stable at all temperatures
POLYMERIZATION	Will not polymerize
INCOMPATIBILITY	Reactive metals, strong bases, most organic compounds
DECOMPOSITION PRODUCTS	Sulfuric dioxide, trioxide, hydrogen sulfide, hydrogen
CONDITIONS TO AVOID	Prohibit smoking, sparks, etc. from battery charging area. Avoid mixing acid with other chemicals.

### SECTION 11: TOXICOLOGICAL INFORMATION

**LEAD:** The toxic effects of lead are accumulative and slow to appear. It affects the kidneys, reproductive, and central nervous system.

The symptoms of lead overexposure are anemia, vomiting, headache, stomach pain (lead colic), dizziness, loss of appetite, and muscle and joint pain. Exposure to lead from a battery most often occurs during lead reclaim operations through the breathing or ingestion of lead dusts and fumes.

**THIS DATA MUST BE PASSED TO ANY SCRAP OR SMELTER WHEN A BATTERY IS RESOLD.**

**SULFURIC ACID:** Sulfuric acid is a strong corrosive. Contact with acid can cause severe burns on the skin and in the eyes. Ingestion of sulfuric acid will cause GI tract burns. Acid can be release if the battery case is damaged or if the vents are tampered with.

**FIBERGLASS SEPARATOR:** Fibrous glass is an irritant of the upper respiratory tract, skin and eyes. For exposure up to 10F/CC use MSA Comfort with type H filter. Above 10F/CC up to 50F/CC use Ultra-Twin with type H filter.

NTP or OSHA does not consider this product carcinogenic.

### SECTION 12: ECOLOGICAL INFORMATION

**ENVIRONMENTAL FATE:** While lead metal and its compounds are generally insoluble, its processing or extended exposure in the aquatic and terrestrial environments may lead to the release of lead in bioavailable forms. If released into water, lead and lead compounds will partly settle out due to their fairly low solubility and partially dissolve. Lead compounds are not particularly mobile in the aquatic environment but can be toxic for organisms, especially fish, at low concentrations. Water hardness, pH and dissolved organic carbon content are factors which regulate the degree of toxicity. In soil, lead and its compounds are generally not very mobile or bioavailable, as they can be strongly absorbed on soil particles, increasingly over time. It also forms complexes with organic matter and clay minerals that limits its mobility. When released into the soil, this material is not expected to leach into groundwater.

### SECTION 13: DISPOSAL CONSIDERATION

**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





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We hereby certify that all Lead-acid Batteries conform to the UN2800 classification as "Batteries, wet, Non-Spillable, and electric storage" as a result of passing the Vibration and Pressure Differential Test described in D.O.T., 49 CFR 173.159(d), and IMO/IMDG, and ICAO/IATA packing instruction 806 and note A67.

The substance is not subject to IMO IMDG Code according to special provision 238.

Batteries having met the related conditions are exempting from hazardous goods regulations for the purpose of transportation by DOT, and IATA/ICAO, and therefore are unrestricted for transportation by any means. For all modes of transportation, each battery outer package is labeled "NON-SPILLABLE". All our Batteries are marked non-spillable.

## SECTION 15: REGULATORY INFORMATION

### NFPA Hazard Rating for Sulfuric Acid:

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

## SECTION 16: OTHER INFORMATION

### NOTICE TO READERS:

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. HuaFu High Technology Energy Storage Co., LTD 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. Additional information is available by calling the telephone number on page one (1) designated for this purpose.

