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Version 1

## SECTION I: CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### Product identifier

**Product Name:** 6-EVF-32 12V32Ah Battery for electric road vehicles

### Details of the supplier of the safety data sheet

**Manufacturer:** HuaFu High Technology Energy Storage Co., Ltd.

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

### Emergency Telephone Number

**Company Telephone:** +86-514-84543660

## SECTION 2: HAZARDOUS COMPONENTS

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

**EMERGENCY OVERVIEW:** This product is a nonspillable lead acid battery. The information below is intended for repeated and prolonged contact with the battery contents in an occupational setting. In the absence of an incident or accident, is not likely to apply to normal product use. However, this Safety Data Sheet (SDS) contains valuable information critical to the safe handling and proper use of this product. This SDS should be retained and available for employees and other users of this product. Always be aware of the risk of fire, explosion, or burns. Do not short circuit the (+) and (-) terminals with any other metals. Do not disassemble or modify the battery. Do not solder a battery directly. Keep away from fire or open flame.

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.

**Eye:**

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

**SECTION 5: FIRE FIGHTING MEASURES**

COMPONENTS	FLASHPOINT	EXPLOSIVE LIMITS	COMMENTS
Lead	None	None	
Sulfuric Acid	None	None	
Hydrogen	259°C	4% - 74.2%	Batteries can emit hydrogen if over charged (float voltage > 2.4 VPC). 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	Temperature 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 carbonate (soda ash), or calcium oxide (lime).

Flush the area with water and discard to the sewage systems. Do not allow unneutralized acid into the sewage system.

### WASTE DISPOSAL METHOD:

Neutralized 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.

### 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 instructions and diagrams when installing or maintaining 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 is exceeded.
EYES	Safety goggles, Face Shield	

## SECTION 9: PHYSICAL/CHEMICAL PROPERTIES

COMPONENTS	DENSITY	MELTING POINT	SOLUBILITY	ODOR	APPEARANCE
Lead	11.34	327.4°C (Boiling)	None	None	Sliver-Gray Metal
Lead Sulfate	6.2	1070°C (Boiling)	40mg/L(15°C)	None	White Powder
Lead Dioxide	9.4	290°C (Boiling)	None	None	Brown Powder
Sulfuric Acid	About 1.3	About 14°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
STABILITY	Stable at all temperature
POLYMERIZATIONS	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 II: 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 at the skin and in the eyes. Ingestion of sulfuric acid will cause GI tract burns. Acid can be released 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 limit 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

<b>Hazards identification:</b> None
<b>UN proper shipping name:</b> None
<b>Transportation primary hazard class:</b> none
<b>Suggestion according to IMO/IMDG Code, the substance is not subject to IMO/IMDG Code according to special provision 238</b>

<b>NOTE</b>	The Battery is a kind of valve regulated lead acid batteries are regulated as Class 8 Corrosive hazardous materials / dangerous goods by international dangerous goods regulations referenced below (i.e., IATA Dangerous Goods Regulations and IMDG Code). However, this battery is excepted from these regulations because the batteries meet Vibration test, Pressure differential test, Leakage test at 55°C of the international dangerous goods regulations. Therefore, the batteries do not need to be shipped and transported as fully-regulated Class 8 Corrosive hazardous materials / dangerous goods when packaged in accordance with these regulations.
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<b>UN Number</b>	2800
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<b>IATA</b>	Packing Instruction 872 and Special Provision A67
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The battery have been tested in accordance with the vibration and pressure differential tests found in Packing Instruction 872 and “crack test” found in Special Provision A67 of the International Air Transport Association (IATA) Dangerous Goods Regulations

When offered for transport, the batteries must be protected against short circuits and securely packaged in accordance with Special Provision A67

<b>IMDG</b>	Special Provision 238.1 and 238.2
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The battery have been tested in accordance with the vibration and pressure differential tests and “crack test” found in Special Provision 238.1 and 238.2.

When offered for transport, the batteries must be protected against short circuits and securely packaged in accordance with Special Provision 238.1 and 238.2.

#### 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. Jiangsu Huafu Power 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.