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MATERIAL SAFETY DATA SHEET

Date Issued	**Feb., 2001**
Date Revised	**July, 2004**

I.Product Identification

Chemical/Trade Name(identity used on label) **Absorbed Electrolyte Battery/HGL/HGXL/HL/HGHL/DC/FAT**	Chemical Family/Classification **Electric Storage Battery**
Synonyms/Common Name **Lead Acid Battery**	Shipping Regulations **See Section IX**
Company Name **FULLRIVER BATTERY MANUFACTURE CO.,LTD.**	Address: **P.O.Box 511475** **Taishi Industrial Area,Yuwotou Town,** **Panyu,Guangzhou,China**

II.Hazardous Ingredients

NOTE: The contents of this product are toxic chemicals that are subject to the reporting requirements of section 302 and 313 of the Emergency Planning and Community Right-to-know Act of 1986 (40CFR 355 and 372).

Material	% by Wt.	CAS Number	Exposure Limits		
			OSHA	ACGIH	Other
Specific Chemical Identity **Lead** Common Name **Grid**	50	7439-92-1	50 μg/m^3	150 μg/m^3	NIOSH 100 μg/m^3
Specific Chemical Identity **Lead Dioxide** Common Name **Lead Oxide**	22	1309-60-6	50 μg/m^3	150 μg/m^3	NIOSH 100 μg/m^3
Specific Chemical Identity **Lead Sulfate** Common Name **Anglisite**	<1	7446-14-2	50 μg/m^3	150 μg/m^3	NIOSH 100 μg/m^3
Specific Chemical Identity **Sulfuric Acid(40%)** Common Name **Battery Electrolyte(Acid)**	23	7664-93-9	2 mg/m^3	1 mg/m^3	NIOSH 1mg/m^3
Specific Chemical Identity Common Name					

III.Physical Data

Material(at nomal temperatures) **/Solid / Liquid / Gas**	Appearance and color **Battery electrolyte(acid) is a clear to cloudy liquid absorbed by internal battery components.Acid saturated lead oxide is a dark reddish-brown to gray solid with slight acidic odor.**
Lowing Point **Lead 1755℃** **Batt. Electrolyte(Acid) 110-112°** Melting Point **327.4℃**	
Specific Gravity(H_2O=1) **Battery Electrolyte (Acid) 1.300~1.302**	Vapor Pressure (mm Hg at 20℃) **Battery Electrolyte(Acid)11.7**
Vapor Density(AIR=1) **Battery Electrolyte (Acid) 3.40~3.45**	Solubility in H2O **Battery Electrolyte(Acid)is 100% soluble in water** **Lead-Lead Oxide are not soluble.**

% Voiatites By weight	Evaporation Rate(Butyl Acetate=1)
Not Determined	**Not Determinde**

Form 9701(Rev.1/97)

IV. Health Hazard Information

NOTE: Under normal conditions of battery use,internal components will not present a health hazard. **The following information is provided for battery electrolyte(acid)and lead for exposure that may occur during battery production of container breakage or under extreme heat conditions such as a fire.**
ROUTES AND METHODS OF ENTRY
Installation **Acid mist generated during battery formation may cause respiratory irritation.**
Skin Contact **Battery electrolyte is not a significant route of entry.**
Eye Contact **Hands contaminated by contact with internal componets of a battery can cause ingestion of lead/lead compounds.** **Hands should be washed prior to eating,drinking,or smoking.**
SIGNS AND SYMPTOMS OF OVEREXPOSURE
Acute Effects **Acute effects of overexposure to lead are Gl(gastrointestinal)upset which may be loss of appetite,diarrhea and/or constipation with cramping,difficulty in sleeping,and fatigue. Exposure appetite,diarrhea and/or and/or contact with battery electrolyte (acid)may lead to acute irritation of the skin,corneal damage of the eyes if not wahsed immediately, and irritation of the mucuous membranes of the eyes and upper respiratory system including lungs.**
Chronic Effects **Lead and its compounds may cause chronic anemia,damage to the kidneys and nervous system. Lead may also cause reproductive system damage and can affect developing fetuses in pregnant women. Battery electrolyte (acid) may lead to scarring of the cornea and chronic bronchitis as well as erosion of tooth enamel in mouth breathers in repeated exposures.**
POTENTIAL TO CAUSE CANCER
The international Agency for Research on Cancer(IARC) has classified"stron inorganic acid mist containing sulfuric acid" as a Category 1 carcinogen,a substance that is carcinogenic to humans. **This classification does not apply to liquid forms sulfric acid or sulfuric acid solutions contained within a 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.**
EMERGENCY AND FIRST AID PRODUCTS
Installation **Remove trom exposure and consult a physician if any of the acute effects listed above develop.**
Skin **Wash thoroughly with soap and water.If electrolyte comes into contact with clothing,remove and discard.**
Eyes **IMMEDIATELY rinse with cool running water for at least 15 minutes.Seek medical attention after rinsing.**
Ingestion **Lead/lead compounds,Consult a physician** **Electrolyte:Do not induce vomiting.Reter to a physician immediately.**
MEDICAL CONDITIONS WHICH CAN BE AGGRAVATED BY EXPOSURE

Inorganic lead and its compounds can aggravate chronic forms of kidney,liver,and neurologic diseases.
Contact of battery electrolyte(acid) with the skin may aggravate skin diseases such as eczema and contact dermatitis.

V. Fire and Explosion Date

Flash Point(test method)	Autoignition Temperature	Flammable limits in Air,% by %Vot(Hydrogen)	
		Lower	**Upper**
Hydrogen-259℃	**Hydrogen 580°**	**4.1**	**74.2**

Extinguishing Media

Dry chemical,foam,or CO2

Special Fire Fighting Prodecures

Use positive pressure,self-contained breathing apparatus.

Unusual Fire and Explosion Hazard

Hydrogen and oxygen gases are produced in the cells during normal battery operation (hydrogen is frlammable and oxygen supports combustion).These gases enter the air through the vent caps. To avoid the chance of a fire of explosion,keep sparks and other sources of ignition away from the battery.

VI. Reactivity Data

Stability	Conditions to avoid
☐ **Unstable** ☒ **Stable**	**Sparks and other sources of ignition**

Incompatibility(material to avoid)

Lead/lead compounts: Potassium,carbides,sulfides,peroxides,phosphorus,sulfur.

Battery electrolyte(acid): Combustible material,strong reducing agents, most metals, carbides, organic materials,chlorates,nitrates,picrates,and fulminates.

Hazardous Decomposition Products

Lead/lead copounds:Oxides of lead and sulfur.

Battery electrolyte(acid):Hydrogen,sulfur dioxide,sulfur trioxide.

Hazardous polymerization	Conditions to avoid
☐ **May Occur** ☒ **Will Not Occur**	**High temperature.Battery electrolyte(acid)will react with water to produce heat.Can react with oxidizing or reducing agents.**

VII.Control Measures

Engineering Controls

Store lead/acid batteries with adequate ventilation.Room ventilation is required for batteries utilized for standby power generation.Never re-charge batteries in an unventilated, enclosed space.

Work Practices

Do not remove vent caps.Following shipping and handing instructions which are applicable to the battery type. To avoid damage to terminals and seals,do not double-stack industrial batteries.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection

None required under normal handling conditions.During battery formation (high-rate charge condition) acid mist can be generated which may cause respiratiory irritation.If irritation orrcurs,wear a respirator suitable for protection against acis mist.

Eyes and Face

Chemical splash goggles are preferred.Also acceptable are"visor-gogs"or a chemical face shield worn over safety glasses.

Hands.Arms.Body

Vinyl coated,PVC,gauntlet type gloves with rough finish are prefered.

Other Special Clothing and Equipment

Safety shoes are recommended when handling batteries.All footwear must meet requirements of ANSI Z41.1-Rev.1972

VIII. Safe handling Precautions

Hygene Practices

Following contact with internal battery components,wash hands thoroughly before eating,drinking, or smoking.

Protective Measures to be taken Non-routine Tasks including Equipment Maintenance

Wear safety glasses. Do not permit flames or sparks in the vicinity of battery(s).If acid comes in contact with clothing,dischard clothing.

SPILL OF LEAK PROCEDURES

Protective Measures to be taken in Material is Released of Spilled

Remove combustible materials and all sources of ignition.Cover spill with soda ash(sodium carbonate) or quicklime(calcium oxide).Mix well.Make certain mixture is neutral then collect residue and place in a drum or other suitable container.Dispose of as hazardous waste.

Wear acid-resistant boots,chemical faceshield,chemical splash goggles,and acid-resistant gloves.

DO NOT RELEASE UNNERTRALIZED ACID!

Waste Disposal Method

Battery electrolyte(acid):Neutralize as above for a spill,collect residue,and place in a drum or suitable container.Dispose of as hazardous waste.

DO NOT FLUSH LEAD CONTAMINATED ACID TO SEWER.

Batteries:Send to lead smelter for reclamation following applicable Federal,state and local regulations.

Product can be recyclced along with automotive(SLI)lead acid batteries.

OTHER HANDLING AND STORAGE PRECAUTIONS

None Required.

IX.Department of Transportation and International Shipping Regulations

DOT-Battery,wet non-spillable,not subject to regulations

IATA-Not restricted for air transport-complies with IATA/ICAO Special Provision A67

IMO-Battery,wet non-spillable,not subject to regulations.