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HANGZHOU HAIJIU BATTERY CO., LTD.

MATERIAL SAFETY DATA SHEET

MSDS Number: 03
Jan 05th, 2010

1. PRODUCT IDENTIFICATION

PRODUCT NAME :	Battery, wet, filled with acid
CHEMICAL FAMILY :	Electric storage battery
CHEMICAL NAME :	Lead Acid Battery
SYNONYMS :	Sealed Battery
UN NO. :	2800
EMERGENCY TELEPHONE NO. :	+86-571-88144451

2. HAZARDOUS INGREDIENTS

Specific Chemical Identity (Common Names)	OSHA PEL	ACGIH TLY	Percent By Weight	Average
Lead, CAS #7439921	0.05mg/m^3	0.05mg/m^3	43-70	65
Antimony, CAS#7440360	0.50mg/m^3	0.50mg/m^3	0-4	<1
Arsenic, CAS#7440382	0.01mg/m^3	0.01mg/m^3	<0.1	-
Sulphuric Acid, CAS#7664939	1.00mg/m^3	1.00mg/m^3	20-44	25
Calcium, CAS#7440702	1.00mg/m^3	1.00mg/m^3	<1	<1
Polypropylene, CAS#9003070	-	-	5-10	8

3. PHYSICAL DATA

MATERIAL IS (at normal temperature)
SULPHURIC ACID : Liquid
LEAD : Solid

BOILING POINT (at 760mm Hg)
SULPHURIC ACID : 230℉/110℃
LEAD : 3164℉(1740℃)
POLYPROPYLENE: >320℉

MELTING POINT
SULPHURIC ACID : -79.6℉/-62℃
LEAD: 621℉(327.43℃)

SPECIFIC GRAVITY (H_2O=1) :
SULPHURIC ACID : 1.28~1.32
LEAD: 11.34

VAPOR DENSITY (AIR=1)
SULPHURIC ACID : 3.4
LEAD: N/A

VAPOR PRESSURE (mm Hg at 20℃)

SULPHURIC ACID :	11.7
LEAD:	NEGLIGIBLE

SOLUBILITY IN H_2O

SULPHURIC ACID :	100%
LEAD:	INSOLUBLE IN WATER

% VOLATILES BY WEIGHT

SULPHURIC ACID :	0
LEAD:	NEGLIGIBLE

EVAPORATION RATE (Butyl Acetate=1)

SULPHURIC ACID :	Not Determined
LEAD:	N/A

APPEARANCE AND ODOR :
Battery Electrolyte (acid) is a clear to cloudy liquid with slight acidic odor. Acid saturated lead oxide is a dark reddish-brown to gray solid with slight acidic odor.

MAIN HAZARD : Poison, corrosive

4.HEALTH HAZARD INFORMATION

NOTE: Under normal condition 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 or container breakage or under extreme heat conditions such as fire.

ROUTES AND METHODS OF ENTRY :
1) INHALATION :
Battery electrolyte (acid) mist generated during battery formation may casue respiratory irritation.
2) SKIN CONTACT :
Battery electrolyte (acid) may cause irritative contact dermatitis.
SKIN ABSORPTION :
Skin absorption is not a significant route of entry.
3) EYE CONTACT :
Battery electrolyte (acid) will irritate the eyes upon contact.
4) INGESTION :
Ingestion is not expected to be a significant route of entry.

SIGNS AND SYMPTOMS OF EXPOSURE:
Acid contact may cause irritation of eyes, nose and throat. Breathing of mist may produce respiratory difficulty. Contact with eyes and skin causes irritation and skin burns. Sulphuric acid is a CORROSIVE chemical.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:
Sulphuric Acid Mist exposure may aggravate medical conditions such as, pulmonary edema, bronchitis, emphysema, dental erosion, and tracheobronchitis. Pregnant women and children must be protected from lead exposure.

POTENTIAL TO CAUSE CANCER :

Sulphuric Acid: The international Agent for Research on Cancer (IARC) has classified" strong inorganic acid mist containing sulphuric acid" as a Category 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulphuric acid contained within a battery. Inorganic acid mist (sulphuric acid mist) is not generated under normal use of this product. Misuse of the products such as overcharging , may result in the generation of sulphuric acid mist.
Lead Components: Lead is listed as 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in human is lacking at precent.
Arsenic: Listed by National Toxicology Program (NTP), IARC, OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

5. EMERGENCY AND FIRST AID PROCEDURES: (SULPHURIC ACID)

1) INHALATION :
Remove from exposure and consult a physician if any of the acute effects listed above develop.
2) SKIN :
Wash thoroughly with soap and water. If acid is splashed on clothing, immediately remove them and discard. If acid is splashed in shoes, remove them immediately and discard. Acid cannot be removed from leather.
3) EYE :
Hold eyelids open and immediately rinse with cool, running watter for at least 15 minutes. Seek medical attention after rinsing.
4) INGESTION :
Do not induce vomiting. See a physician immediately. Do not give anything by mouth to an unconscious person.

6.FIRE FIGHTING MEASURES

Flash point:	Non-Flammable
Flammable limits:	Hydrogen Gas
Extinguishing media:	Class ABC extinguisher, CO_2

SPECIAL FIRE FIGHTING PROCEDURES:
Cool exterior of battery if exposed to fire to prevent rupture. The acid mist and vapors in a fire situation are corrosive. Wear special respiratory protection (SCBA) and clothing.

UNUSUAL FIRE AND EXPLOSION HAZARD:
Hydrogen gas, which may explode if ignited, is produced by this battery, especially when charging. Use adequate ventilation; avoid open flames, sparks, or other sources of ignition.

7. STABILITY AND REACTIVITY

STABILITY: Stable

CONDITION TO AVOID:
Prolonged overcharging, sources of ignition

INCOMPATIBILITY (MATERIALS TO AVOID):
Sulphuric Acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, strong oxidizers

and water. Contact with metals may produce toxic sulphur dioxide fumes and may release flammable hydrogen gas.

HAZARDOUS DECOMPOSITION OF BY-PRODUCTS:
Sulphuric Acid: Excessive overcharging or fire may create Sulphur trioxide, carbon monoxide, sulphuric acid mist, sulphur dioxide, and hydrogen.
Lead Compounds: Contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

8.CONTROL MEASURES

RESPIRATORY PROTECTION (SPECIFIC TYPE): Respirator required when PEL is exceeded or employee witnesses respiratory irritation. (see Section 6, Health Hazard Data).

VENTILATION:
Must be provided when charging in an enclosed area. (29CFR1910178(g) and .305(j)(7))

Mechanical (general): Acceptable at 1 to 4 air exchanges/hour or to maintain air concentrations below the PEL.

Local Exhaust: Preferred

Other: Local building/fire codes may require explosion proof fans and equipment.

PROTECTIVE GLOVES: Acid resistant

EYE PROTECTION: Preferred, safety glasses, goggles, face shield

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Acid resistance aprons, boots and protective clothing

WORK HYGIENIC PRACTICES: Good personal hygiene and practices are mandatory.

9. SAFE HANDLING PRECAUTIONS

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
(SULPHRUIC ACID):
Dilute spill cautiously with five to six volumes of water and gradually neutralize with sodium bicarbonate soda ash or lime. When exposure level is not known, wear NIOSH approved positive pressure self-contained breathing apparatus. Reference North American Emergency Response Guidebook, #154.

PRECAUTION TO BE TAKEN IN HANDLING AND STORAGE:
Storage away form reactive material as defined in Section 5, Reactivity Data. Place cardboard between layers of stacked batteries to avoid damage and short circuit. Do not allow metallic materials to simultaneously contact both terminals.

OTHER PRECAUTION:
Sodium bicarbonate, soda ash, hand, or lime should be kept in same general area for emergency use. Keep away from sources of ignition during charging see Section 4 on generation of hydrogen gas. If battery case is broken, avoid direct contact with internal components.

10. TOXOCOLOGICAL INFORMATION

EFFECTS OF OVEREXPOSURE

ACUTE:
LEAD COMPOUNDS:
Acute untreated overexposure to lead may lead to weakness, vomiting, loss of appetite, un-coordinated body movements, convulsions, stupor and possible coma.

SULPHURIC ACID:
Exposure to high concentrations of battery electrolyte (acid) mist cause severe irritation of eyes, respiratory tract and skin. It may also casue tooth erosion, mouth soreness, or breathing difficulties. Contact with battery electrolyte (acid) may irritate the skin and mucous membranes and may cause irreparable corneal damage and blindness as well as facial scarring which can include the eyelids.

CHRONIC:
LEAD COMPOUNDS:
Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances and irritability.

SULPHURIC ACID:
Pepeatied or prolonged exposure to battery electrolyte (acid) may cause skin irritation. Repeated or prolonged exposure to mist may erode the teeth, cause dermatitis, chronic irritation of eyes. Mouth and stomach, and chronic inflammation of the nose, throat and bronchial tubes.

11. ECOLOGICAL INFORMATION

LEAD COMPOUNDS:
ANIMAL TOXICITY:
Oral (pigeon) LD_{Lo}: 160 mg/kg.

AQUATIC TOXICITY:
Toxic to aquatic life, fish, crustaceans.

BIODEGRADABILITY:
The product has no effect on the environment unless in safely divided form.

BIOACCUMULATION:
Lead is taken from the soil by plants and can be concentrated in the food chain.

MOBILITY:
It is relatively mobile in the aquatic environment and can be concentrated by aquatic organisms.

SULPHURIC ACID:
AQUATIC TOXICITY :
Toxic to aquatic life, fish, daphnia, algae

BIODEGRADABILITY :

When release into the soil this material may leach into ground water. When released into the air this material may be removed from the atmosphere to a moderate extent by wet deposition and dry deposition.

BIOACCUMULATION :
Not known

MOBILITY :
Not known

12.DISPOSAL CONSIDERATION

WASTE DISPOSAL METHOD:
Lead-acid batteries are completely recyclable. For information on returning batteries to East Penn for recycling, contact your East Penn Representative. Dispose of any collected material in accordance with local, state or applicable federal regulations.

13. OTHER INFORMATION

NFPA Hazard Rating	Sulphuric Acid	Lead
Health (Blue)	3	3
Flammability (Red)	0	0
Reactivity (Yellow)	2	0

Note: Sulphuric acid is water-reactive if concentrated.

TRANSPORTATION INFORMATION:
THE NON-SPILLABLE LEAD ACID BATTERY COMPLIES WITH THE PROVISIONS LISTED IN 49CRFR173.159(d) AND (SP)238 VICE UN238. THEREFORE WILL NOT BE MARKED WITH AN IDENTIFICATION NUMBER SUCH AS UN2800 OR HAZARD LABEL SUCH AS CORROSIVE.

CRA: Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulphuric acid is a characteristic hazardous waste, EPA hazardous waste number D02 (corrosivity).

CRCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know ACT)

a) Reprotable Quantity (RQ) for spilled 100% sulphuric acid is 1000 lbs.
b) Sulphuric acid is a listed « Extremely Hazardous Substance » under EPCRA with a Threshold Planning Quantity (TPQ) OF 1000 lbs.
c) EPCRA Section 312 Tier II reporting required for batteries if sulphuric acid is present in quantityies of 5000 lbs or more and/or lead is present in quanitities of 10,000 lbs or more.

SATA TITLE III
THE CHEMICALS LISTED BELOW ARE TOXIC CHEMICALS SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLEIII OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

MATERIAL OR COMPONENT	CAS#	WEIGHT %
Lead and lead compounds	7439-92-1	<95
Antimony	7440-36-0	<1.1

Arsenic	7440-38-2	<0.1

THIS LEAD-ACID BATTERY IS CLASSIFIED AS A MANUFACTURED ARTICLE (10 CFR 372.3) AND THE HAZARDOUS MATERIALS (LEAS, ANTIMONY, ARSENIC AND NICKEL COMPOUNDS) CONTAINED WITHIN ARE NOT RELEASED UNDER NORMAL CONDITIONS OF USE. SICNE THESE CHEMICALS ARE NOT RELEASED DURING NORMAL USE THEY ARE EXEMPT FROM THE REPORTING REQUIREMENTS CONTAINED IN 40 CFR PART 372 SUBPART B. HOWEVER, SULFURIC ACID MAY BE RELEASED INTO THE ENVIRONMENT IF A BATTERY BREAKS AND THEREFORE MAY NOT BE EXEMPT FROM THE REPORTING REQUIREMENTS OF SARA TITLE III. SEE EXEMPTIONS, 40 CFR 372.38 (b).

THIS INFORMATION SHOULD BE INCLUDED IN ALL MSDS'S THAT ARE COPIED AND DISTRIBUTED FOR THIS MATERIAL.

WARNING :
Corrosive liquid and mist casue severe burns to all body tissue. May be fatal if swallowed or contacted with skin. Harmful if inhaled. Affects teeth. Water reactive. Cancer hazard. Strong inorganic mists containing sulphuric acid can casue cancer.

PROPOSTION 65 WARNING
BATTERY POSTS, TERMINALS AND RELATED ACCESSORIES CONTAIN LEAD AND LEAD COMPOUNDS, CHEMICALS KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER AND REPRODUCTIVE HARM. WASH HANDS AFTER HANDLING.

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