

Material Safety Data Sheet

1 Identification of the substance/preparation and of the company/undertaking

.Product details

.Trade name: Lead Acid Battery

.Application of the substance: Automobile emergency battery

.Manufacturer/Supplier: Ningbo RuiHua Electronics Plastics Co., Ltd

No.10 South Road. DiTang Town ,YuYao City, China.

Tel: +86-574-62263629

Fax: +86-574-622640255

.Further information obtainable from: Ningbo RuiHua Electronics Plastics Co. ,Ltd

.Information in case of emergency:

Ningbo RuiHua Electronics Plastics Co., Ltd

Mr. Lou Sen Lian

Tel: +86-574-62263629

2 Composition/information on ingredients

.Chemical characterization

.Description: Mixture of substances listed below with additions.

.Components Number:	CAS Number	Approximate(%)by Wt.Or Vol.	Air Exposure Limits (ug/m2)		
			OSHA	ACGH	NIOSH
<i>Inorganic Lead Compound</i>					
<i>Lead</i>	7439-92-1	45-63	50	150	100
<i>.Lead Dioxide</i>	1309-60-0	15-25	50	150	100
<i>.Antimony</i>	7440-36-0	2	500	500	--
<i>.Arsenic</i>	7440-70-2	0.2	10	200	--
<i>.Calcium</i>	7440-70-2	0.2	--	--	--
<i>Electrolyte(H2SO4)</i>	7664-93-9	23-33	1000	1000	1000
<i>Case Material:</i>		5-10	N/A	N/A	N/A
<i>.Polypropylene</i>	9003-07-0				
<i>.Polystyrene</i>	9003-53-6				
<i>.Styrene Acrylonitrile</i>	9003-54-7				
<i>.Acrylonitrile Butadiene Styene</i>	9003-56-9				
<i>.Styrene Butadiene</i>	9003-55-8				
<i>.Polyvinylchloride</i>	9002-86-2				
<i>.Polycarbonate, Hard Rubber</i>	--				
<i>ABS</i>	9003-56-9	8-11	N/A	N/A	N/A
<i>Epoxy Resin</i>	61788-97-4	0.3-0.5	N/A	N/A	N/A
<i>Ti</i>	7440-31-5	0.04-0.05	2000	2000	--

3 Hazards identification



T: Toxic



Xn: Harmful



Xi: Irritant



C: Corrosive



N: Dangerous for the environment

.Inhalation:

Sulfuric Acid: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.

Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

.Ingestion:

Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach.

Lead Compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

.Skin Contact:

Sulfuric Acid: Severe irritation, burns and ulceration.

Lead Compounds: Not absorbed through the skin.

.Eye Contact:

Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness.

Lead Components: May cause eye irritation.

.Effects of Overexposure - Acute:

Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.

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

.Effects of Overexposure - Chronic:

Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat and bronchial tubes.

Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females.

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 least 15 minutes; consult physician.

.Proposition 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. Batteries also contain other chemicals known to the State of California to

cause cancer. Wash hands after handling.

5 Fire-fighting measures

.Extinguishing Media: CO₂; foam; dry chemical

.Special Fire Fighting Procedures: If batteries are on charge, shut off power. Use positive pressure, self-contained breathing apparatus. Water applied to electrolyte generates heat and causes it to spatter. Wear acid-resistant clothing.

.Unusual Fire and Explosion Hazards: Highly flammable hydrogen gas is generated during charging and operation of batteries. To avoid risk of fire or explosion, keep sparks or other sources of ignition away from batteries. Do not allow metallic materials to simultaneously contact negative and positive terminals of cells and batteries. Follow manufacturer's instructions for installation and service.

6 Accidental release measures

.Person-related safety precautions: Wear protective equipment, Keep unprotected persons away.

.Measures for environmental protection:

Do not allow product to reach sewage system or any water course.

Inform respective authorities in case of seepage into water course or sewage system.

Do not allow to enter sewers/surface or ground water.

.Measures for cleaning/collection:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Dispose contaminated material as waste according to item 13.

Ensure adequate ventilation.

.Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Vacuum or sweep up material and place into a suitable, dry disposal container.

7 Handling and storage

.Handling:

.Information for safe handling:

Ensure good ventilation/exhaustion at the workplace.

.Information about fire- and explosion protection:

Keep ignition sources away-Do not smoke.

Protect against electrostatic charges.

.Storage:

.Requirements to be met by storerooms and receptacles: No Required.

.Information about storage in one common storage facility: Not required.

.Further information about storage condition: None.

8 Exposure controls/personal protection

.Engineering Controls:

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant.

.Work Practices:

Handle batteries cautiously to avoid spills. Make certain vent caps are on securely. Avoid contact with internal components. Wear protective clothing when filling or handling batteries.

.Respiratory Protection:

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed the PEL, use NIOSH or MSHA-approved respiratory protection.

.Protective Gloves:



Protective Gloves

Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

.Eye Protection:



Tightly sealed goggles

Chemical goggles or face shield.

.Other Protection:

Acid-resistant apron. Under severe exposure emergency conditions, wear acid-resistant clothing and boots.

.Emergency Flushing: In areas where sulfuric acid is handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

9 Physical and chemical properties

.General Information	
Form:	Manufactured article
Color:	Black
Odor:	No apparent odor
.Change in condition	
Melting point/Melting range:	145-155 deg C (dec)
Boiling point/Boiling range:	Not available
.Flash point:	Not applicable
.Self-igniting:	Product is not self-igniting
.Danger of explosion:	12% (V/V)
.Density:	490 deg C (Powder)
.Relative density:	Not available
.Vapor density:	Not available
.Evaporation rate	Not available
.Solubility in/Miscibility with	
Water:	Not miscible or difficult to mix
.PH-Value:	Not available
.Viscosity:	
Dynamic:	Not available

10 Stability and reactivity

.Chemical Stability: Stable under normal temperatures and pressures.

.Conditions to Avoid: Prolonged overcharge; sources of ignition.

.Incompatibilities with Other Materials:

Sulfuric Acid: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Lead Compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen and reducing agents.

.Hazardous Decomposition Products:

Sulfuric Acid : Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, and hydrogen

Lead Compounds : High temperatures likely to produce toxic metal fume, vapor, or dust ; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

.Hazardous Polymerization: Has not been reported.

11 Toxicological information

.Routes of Entry:

Sulfuric Acid: Harmful by all routes of entry.

Lead Compounds: Hazardous exposure can occur only when product is heated, oxidized or otherwise processed or damaged to create dust, vapor or fume.

.Inhalation:

Sulfuric Acid: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.

Lead Compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

.Ingestion:

Sulfuric Acid: May cause severe irritation of mouth, throat, esophagus and stomach

Lead Compounds: Acute ingestion may abdominal pain, nausea, vomiting, diarrhea and severe cramping. This may lead rapidly to systemic toxicity and must be treated by a physician.

.Skin Contact:

Sulfuric Acid: Severe irritation, burns and ulceration.

Lead Compounds: Not absorbed through the skin.

.Eye Contact:

Sulfuric Acid: Severe irritation , burns, cornea damage, and blindness.

Lead Components: May cause eye irritation.

.Effects of Overexposure-Acute:

Sulfuric Acid: Severe skin irritation, damage to cornea, upper respiratory irritation.

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

.Effects of Overexposure-Chronic:

Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat and bronchial tubes.

Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females.

.Carcinogenicity:

Sulfuric Acid: 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 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 result in the generation of sulfuric acid mist.

Lead Compounds: Lead is listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

Arsenic: Listed by National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

.Medical Conditions Generally Aggravated by Exposure:

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of sulfuric acid with skin may aggravate diseases such as eczema and contact dermatitis. Lead and its compounds can aggravate some forms of kidney, liver and neurologic diseases.

12 Ecological information

.Ecotoxicological effects:

.Remark: Toxic for fish

.General notes:

Water hazard class 3 (self- assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Danger to drinking water if even quantities leak into the ground.

Also poisonous for fish and plankton in water bodies.

Toxic for aquatic organisms

13 Disposal considerations

.Spill or Leak Procedures:

Stop flow of material, contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. Do not allow discharge of unneutralized acid to sewer.

.Waste Disposal Methods:

Spent batteries: Send to secondary lead smelter for recycling.

Place neutralized slurry into sealed containers and handle as applicable with state and federal regulations. Large water-diluted spills, after neutralization and testing, should be managed in accordance with approved local, state and federal requirements. Consult state environmental agency and/or federal EPA.

.Handling and Storage:

Store batteries in cool, dry, well-ventilated areas with impervious surfaces and adequate containment in the event of spills. Batteries should also be stored under roof for protection against adverse weather conditions. Separate from incompatible materials. Store and handle only in areas with adequate water supply and spill control. Avoid damage to containers. Keep away from fire, sparks and heat.

Precautionary Labeling:

POISON - CAUSES SEVERE BURNS DANGER - CONTAINS SULFURIC ACID

.Recommendation Disposal must be made according to official regulations.

14 Transport information



.Proper Shipping Name: Batteries, wet, filled with acid

.Packing Group: III

.Hazardous Class: 8

.Label/Placard Required: Corrosive

.UN Identification: UN2794

.U.S. DOT: The transportation of wet and moist charged (moist active) batteries within the continental United States is regulated by the U.S. DOT through the Code of Federal Regulations, Title 49 (CFR49). These regulations classify these types of batteries as a hazardous material. Refer to CFR 49, 173.159 for more details pertaining to the transportation of wet and moist batteries.

The shipping information is as follows:

Proper Shipping Name: Batteries, wet, filled with acid

Packing Group: III

Hazardous Class: 8

Label/Placard Required: Corrosive

UN Identification: UN2794

Some EnerSys batteries have been tested and meet the non-spillable criteria listed in CFR 49, 173.159 (d) (3) (i) and (ii).

Non-spillable batteries are excepted from CFR 49, Subchapter C requirements, provided that the following criteria are met:

1. The batteries must be protected against short circuits and securely packaged.
2. The batteries and their outer packaging must be plainly and durably marked "NON-SPILLABLE" or "NON-SPILLABLE BATTERY".

The exception from CFR 49, Subchapter C translates to no proper shipping name, no hazardous class, no UN number, no packing group and no hazardous labels when transporting a non-spillable battery

.IATA: The international transportation of wet and moist charged (moist active) batteries is regulated by the International Air Transport Association (IATA). These regulations also classify these types of batteries as a hazardous material. The batteries must be packed according to IATA Packing Instruction 800.

The shipping information is as follows:

Proper Shipping Name: Batteries, wet, filled with acid

Packing Group: III

Hazardous Class: 8

Label/Placard Required: Corrosive

UN Identification: UN2794

Some EnerSys batteries have been tested and meet the non-spillable criteria listed in IATA Packing Instruction 806.

Non-spillable batteries must be packed according to IATA Packing Instruction 806.

The shipping information for non-spillable batteries is as follows:

Proper Shipping Name: Batteries, wet, non-spillable

Packing Group: III

Hazardous Class: 8

Label/Placard Required: Corrosive

UN Identification: UN2800

In addition, some batteries have been tested and meet the non-regulated criteria listed in IATA special provision A67.

These batteries are excepted from all IATA regulations provided that the batteries' terminals are protected against short circuits.

Contact your RuiHua representative for additional information regarding the classification of batteries.

.IMDG: The international transportation of wet and moist charged (moist active) batteries is regulated by the International

Maritime Dangerous Goods code (IMDG). These regulations also classify these types of batteries as hazardous material. The batteries must be packed according to IMDG code pages 8120 and 8121.

The shipping information is as follows:

Proper Shipping Name: Batteries, wet, filled with acid

Packing Group: III

Hazardous Class: 8

Label/Placard Required: Corrosive

UN Identification: UN2794

Some RuiHua batteries have been tested and meet the non-spillable criteria listed on page 8121. Non-spillable batteries must be packed according to IMDG page 8121.

The shipping information for non-spillable batteries is as follows:

Proper Shipping Name: Batteries, wet, non-spillable

Packing Group: III

Hazardous Class: 8

Label/Placard Required: Corrosive

UN Identification: UN2800

In addition, some RuiHua non-spillable batteries have been tested and meet the non-regulated criteria listed in the IMDG code page. 8121.

These batteries are excepted from all IMDG code provided that the batteries' terminals are protected against short circuits.

Contact your RuiHua representative for additional information regarding the classification of batteries.

.RCRA: Spent lead-acid batteries are not regulated as hazardous waste by the EPA when recycled, however state and international regulations may vary.

.CERCLA (Superfund) and EPCRA:

(a) Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning Community Right to Know Act) is 1,000 lbs. State and local reportable quantities for spilled sulfuric acid may vary.

(b) Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of 1,000 lbs.

(c) EPCRA Section 302 notification is required if 1,000 lbs. or more of sulfuric acid is present at one site. The quantity of sulfuric acid will vary by battery type. Contact your EnerSys representative for additional information.

(d) EPCRA Section 312 Tier 2 reporting is required for batteries if sulfuric acid is present in quantities of 500 lbs. or more and/or if lead is present in quantities of 10,000 lbs. or more.

(e) Supplier Notification: This product contains toxic chemicals, which may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements.

If you are a manufacturing facility under SIC codes 20 through 39, the following information is provided to enable you to complete the required reports:

Toxic	Chemical CAS Number
Lead	7439-92-1
Sulfuric Acid	7664-93-9
* Antimony	7440-36-0
* Arsenic	7440-38-2

If you distribute this product to other manufacturers in SIC Codes 20 through 39, this information must be provided with the first shipment of each calendar year.

The Section 313 supplier notification requirement does not apply to batteries, which are "consumer products".

* Not present in all battery types. Contact your RuiHua representative for additional information.

.TSCA: Ingredients in RuiHua batteries are listed in the TSCA Registry as follows:

	<u>Components</u>	<u>CAS Number</u>	<u>TSCA Status</u>
Electrolyte:	Sulfuric Acid (H2SO4)	7664-93-9	Listed
Inorganic Lead Compound :	Lead (Pb)	7439-92-1	Listed

Lead Oxide (PbO)	1317-36-8	Listed
Lead Sulfate (PbSO4)	7446-14-2	Listed
Antimony Sb)	7440-36-0	Listed
Arsenic (As)	7440-38-2	Listed
Calcium (Ca)	7440-70-2	Listed
Tin (Sn)	7440-31-5	Listed

.CAA: RuiHua supports preventative actions concerning ozone depletion in the atmosphere due to emissions of CFC's and other ozone depleting chemicals (ODC's), defined by the USEPA as Class I substances. Pursuant to Section 611 of the Clean Air Act Amendments (CAAA) of 1990, finalized on January 19, 1993.

15 Regulatory information

.Sara

.Section 355 (extremely hazardous substance):

None of the ingredient is listed

.Section 313 (specific toxic chemical listings):

None of the ingredients is listed.

.TSCA (Toxic substances Control ACT):

7664-93-9 H2SO4

7439-92-1 Lead

1309-60-0 Lead Dioxide

.Proposition 65

.Chemicals know to cause cancer:

7439-92-1 Lead

1309-60-0 Lead Dioxide

.Chemical known to cause reproductive toxicity for females:

7439-92-1 Lead

1309-60-0 Lead Dioxide

.Chemical known to cause reproductive toxicity for males:

7439-92-1 Lead

1309-60-0 Lead Dioxide

.Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

.Carcinogenicity categories

.EPA (Environmental Protection Agency)

7664-93-9 H2SO4

7439-92-1 Lead

1309-60-0 Lead Dioxide

.IARC (International Agency for Research on Cancer)

7439-92-1 Lead

1309-60-0 Lead Dioxide

.NTP (National Toxicology Program)

7439-92-1 Lead

1309-60-0 Lead Dioxide

TLV (Threshold Limit Value established by ACGIH)

7439-92-1 Lead

1309-60-0 Lead Dioxide

.NIOSH-Ca (National Institute for Occupational Safety and Health)

7439-92-1 Lead

.OSHA-Ca (Occupation Safety & Health Administration)

7439-92-1 Lead

.Labeling according to EU guideline:

The product has been classified and marked in accordance with Directives /Ordinance on Hazardous Materials.

.Hazard symbol:

T Toxic

N Dangerous for the environment

.Contains:--

.Risk phrases: This product is classified as hazardous

R20 Harmful by inhalation.

R21 Harmful in contact with skin.

R22 Harmful if swallowed.

R23 Toxic by inhalation.

R24 Toxic in contact with skin.

R25 Toxic if swallowed.

R36 Irritating to eyes.

R37 Irritating to respiratory system.

R38 Irritating to skin.

R41 Risk of serious damage to the eyes.

R42 May cause sensitization by inhalation.

R43 May cause sensitization by skin contact.

R20/21 : Harmful by inhalation and in contact with skin.

R20/21/22 : Harmful by inhalation, in contact with skin and if swallowed.

R20/22 : Harmful by inhalation and if swallowed.

R21/22 : Harmful in contact with skin and if swallowed.

R23/24/25 : Toxic by inhalation, in contact with skin and if swallowed.

R23/25 : Toxic by inhalation and if swallowed.

R26/27/28 : Very toxic by inhalation, in contact with skin and if swallowed.

R26/28 : Very toxic by inhalation and if swallowed.

.Safety phrases:

S2: Keep out of the reach of children.

S17: Keep away from combustible material.

S18: Handle and open container with care.

S24: Avoid contact with skin.

S25: Avoid contact with eyes.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S41: In case of fire and / or explosion do not breathe fumes

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.).

S1/2 : Keep locked up and out of the reach of children.

S24/25 : Avoid contact with skin and eyes.

S36/37 : Wear suitable protective clothing and gloves.

S36/37/39 : Wear suitable protective clothing, gloves and eyeface protection.

S37/39 : Wear suitable gloves and eyeface protection.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

.Emergency Telephone Number: +86-574-62263629

.Department issuing MSDS: Ningbo RuiHua Electronics Plastics Co., Ltd

.Contact: Lou Sen Lian

*****The End*****