Safety Data Sheet (SDS)

1. IDENTIFICATION

Issue Date: 06/01/2015, SDS # 002, Version #: 01

Product Name	AGM Maintenance Free and Conventional Powersports Batteries supplied with acid pack
Synonyms	Battery Supplied Dry with Acid Pack, Fresh Pack
Product Use	Vehicle Electrical System
Manufacturer / Supplier / Address	**Yacht Battery Co., Ltd.** 4F-5, No. 925, Sec. 4, Taiwan Blvd., Taichung, 40767 Taiwan, R.O.C. **Yacht Technology (Vietnam), Co., Ltd.** Lot_A9H_CN, Bau Bang Industrial Park, Bau Bang District, Binh Duong Province, Vietnam www.yacht-battery.com
Transportation Emergency Number	Infotrac (24-Hour Emergency Contact Number) 1-800-535-5053 (North America) 1-352-323-3500 (International)

NOTE: The Yacht battery is considered an article as defined by 29 CFR 1910.1200 (OSHA Hazard Communication Standard). The information contained in this SDS is supplied at the customer's request for information only.

2. GHS HAZARD(S) IDENTIFICATION

Health		Environmental	Physical
Acute Toxicity (Oral, dermal, inhalation)	Category 4	Aquatic Chronic 1 Aquatic Acute 1	Explosive Chemical, Division 1.3
Skin corrosion / irritation	Category 1A		
Eye Damage	Category 1		
Reproductive	Category 1A		
Carcinogenicity (lead)	Category 1B		
Carcinogenicity (acid mist)	Category 1A		
Specific target organ toxicity (repeated exposure)	Category 2		

GHS Label Elements:

Health	Environmental	Physical
		
Hazard Statements **DANGER!** • Causes severe skin. • Causes serious eye damage. • May damage fertility or the unborn child if ingested or inhaled. • May cause cancer if ingested or inhaled. • Causes damage to central nervous system, blood and kidneys through prolonged or repeated exposure. • May form explosive air / gas mixture during charging. • Extremely flammable gas (hydrogen). • Explosive, fire, blast or projection hazard.	**Precautionary Statements** • Wash thoroughly after handling. • Do not eat, drink or smoke when using this product. • Wear protective gloves / protective clothing, eye protection / face protection. • Avoid breathing dust / fume / gas / mist / vapors / spray. • Use only outdoors or in a well-ventilated area. • Causes skin irritation, serious eye damage. • Contact with internal components may cause irritation or severe burns. Avoid contact with internal acid. • Irritating to eyes, respiratory system, and skin.	

Safety Data Sheet (SDS)

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical / Common Names)	CAS Number	% by Weight
Inorganic Lead / Lead Compounds	7439-92-1	60-85
Electrolyte (H_2SO_4 / H_2O)	7664-93-9	10-28
Antimony	7440-36-0	<0.5
Tin	7440-31-5	<0.01
Arsenic	7440-38-2	<0.01
Calcium	7440-70-2	<0.01
Polypropylene	9003-07-0	3-10

Composition Comments: All concentrations are in percent by weight.

4. FIRST AID MEASURES

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 exposures that may occur during battery production or container breakage or under extreme heat conditions such as fire.

Inhalation	• Sulfuric Acid: Remove to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician. • Lead: Remove from exposure, gargle, wash nose and lips; consult physician.
Skin contact	• Sulfuric Acid: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes. If symptoms persist, seek medical attention. • Lead: Wash immediately with soap and water.
Eye contact	• Sulfuric Acid and Lead: Flush immediately with large amounts of water for at least 15 minutes while lifting lids; Seek immediate medical attention if eyes have been exposed directly to acid.
Ingestion	• Sulfuric Acid: Give large quantities of water; Do NOT induce vomiting or aspiration into the lungs may occur and can cause permanent injury or death; consult physician. • Lead: Consult physician immediately.

5. FIRE FIGHTING MEASURES

Flash Point	Not applicable unless individual components exposed.
Auto ignition Temperature	No data available.
Flammable Limits	LEL = 4.1% (Hydrogen Gas in air) ; UEL = 74.2%
Extinguishing Media	CO2; foam; dry chemical. Do not use carbon dioxide directly on cells. Avoid breathing vapors. Use appropriate media for surrounding fire.
Unsuitable Extinguishing Media	Water
Special Fire Fighting Procedures	Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down.

Unusual Fire and Explosion Hazard	Highly flammable hydrogen gas is generated during charging and operation of batteries. If ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery. Follow manufacturer's instructions for installation and service.

6. ACCIDENTAL RELEASE MEASURES

Protective Measures to be Taken if Material is Released or Spilled	Stop flow of material, contain / absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled acid 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. Acid must be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and / or federal EPA.
Waste Disposal Method	Dispose of as a hazardous waste. Dispose of in accordance with applicable local, state and federal regulations.

7. HANDLING AND STORAGE

Handling	Unless involved in recycling operations, do not breach the casing or empty the contents of the battery. Handle carefully and avoid tipping, which may allow electrolyte leakage. There may be increasing risk of electric shock from strings of connected batteries. Keep containers tightly closed when not in use. If battery case is broken, avoid contact with internal components. Keep vent caps on and cover terminals to prevent short circuits. Place cardboard between layers of stacked automotive batteries to avoid damage and short circuits. Keep away from combustible materials, organic chemicals, reducing substances, metals, strong oxidizers and water. Use banding or stretch wrap to secure items for shipping.
Storage	Store frost-free under roof; prevent short circuits. Do not store in sealed, unventilated areas. Seek agreement with local water authorities in case of larger quantities. Avoid overheating and charging. Do not use organic solvents or anything other than manufacturers recommended cleaners on the batteries. If batteries have to be stored in storage rooms, it is imperative that the instructions for use are observed.
Charging	There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged may generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.
Other	Follow Manufacturers Recommendations regarding maximum recommended currents and operating temperature range. Do not overcharge beyond the recommended upper charging voltage limit. Applying pressure or deforming the battery may lead to disassembly followed by eye, skin and throat irritation.

8. *EXPOSURE CONTROLS / PERSONAL PROTECTION*

Occupational exposure limits (mg/m³)

Ingredients	CAS Number	OSHA PEL	ACGIH	US NIOSH	Quebec PEV	Ontario OEL	EU OEL
Lead, inorganic	7439-92-1	0.05	0.05	0.05	0.05	0.05	0.15 (b)
Antimony	7440-36-0	0.5	0.5	0.5	0.5	0.5	0.5 (b,c)
Tin	7440-31-5	2	2	2	-	-	-
Copper	7440-50-8	1	1	1	1	1 (a)	0.1 (d)
Arsenic	7440-38-2	0.01	0.01	0.01	-	-	-
Polypropylene	9003-07-0	N.E.	N.E.	N.E.	N.E.	N.E.	N.E.
Electrolyte (H_2SO_4 / H_2O)	7664-93-9	1	0.2	1	1	0.2	0.05 (e)

NOTES:
(a) As dust/mists
(b) As inhalable aerosol
(c) Based on OEL's of Austria, Belgium, Denmark, France, Netherlands, Switzerland, & UK
(d) Based on OEL of Netherlands
(e) Thoracic fraction

- **OSHA:**
  Lead - US OSHA Specifically Regulated Substances (29 CFR 1910.1001 – 1050)
  Sulfuric Acid - US OSHA Table Z-1 Limits for Air Contaminants (29CFR 1910.1000)
- **ACGIH:** US ACGIH Threshold Limit Values
- **NIOSH:** US NIOSH Pocket Guide to Chemical Hazards

Biological limit values

ACGIH: ACGIH Biological Exposure Indices

Ingredient	ACGIH	Determinant	Specimen
Lead	300 µg/l	Lead	Blood

Exposure Guidelines:
The OELs listed above are only applicable if the internal components of the battery cell are released. Follow standard monitoring procedures.

Engineering Controls (Ventilation)	Store AGM Maintenance Free and Conventional Powersports Batteries at ambient temperature. Never recharge batteries in an unventilated, enclosed space. Do not subject product to open flame or fire. Avoid conditions that could cause arcing between terminals.
Respiratory Protection (NIOSH / MSHA approved)	NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.
Skin Protection	NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT. If battery case is damaged, use rubber or plastic acid-resistant gloves with elbow-length gauntlet, acid-resistant apron, clothing and boots.
Eye Protection	NONE REQUIRED FOR NORMAL HANDLING OF THE FINISHED PRODUCT. If necessary to handle damage product where exposure to the organic electrolyte is a possibility, chemical splash goggles and a face shield are recommended.
Other Protection	Safety footwear meeting the requirements of ANSI Z 41.1 is recommended when it is necessary to handle the finished product.

General Hygiene Considerations	When using, do not eat, drink, or smoke. Wash hands after handling. Contaminated work clothing should not be allowed out of the workplace. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor	Manufactured article; no apparent odor.
Odor Threshold	Not applicable
pH	Not applicable
Melting Point	Lead – 621.32 °F (327.4 °C) Not applicable unless individual components exposed.
Boiling Point	Battery Electrolyte (Acid) – 230 - 233.6 °F (110 - 112 °C) Lead – 3180 °F (1749 °C) Not applicable unless individual components exposed.
Flash Point	Not applicable
Evaporation Rate (Butyl Acetate = 1)	Not applicable
Vapor Pressure (mm Hg @ 20 ° C)	Battery Electrolyte (Acid) 11.7
Upper / lower flammability or explosive limits	Hydrogen Flammability Limit Lower – 4.1 % Flammability Limit Upper – 74.2 %
Vapor Pressure	10.95 mm Hg (Sulfuric Acid)
Vapor Density	Not applicable
Relative Density	1.21 - 1.3 Battery Electrolyte (Acid)
Solubility	Lead and Lead dioxide are not soluble. 100 % Battery Electrolyte (Acid).
% Volatile by Weight	Not applicable unless individual components exposed.
Partition coefficient (n-octanol / water)	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	Not applicable
Viscosity	Not applicable
Density	11.35 g/cm³ Lead

10. STABILITY AND REACTIVITY

Reactivity	This product is non-reactive under normal conditions or use, storage, and transport.
Stability	The AGM Maintenance Free and Conventional Powersports batteries are considered stable.
Conditions to Avoid	Sparks and other sources of ignition; high temperature; over charging.
Incompatibility (materials to avoid)	• 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	• Acid: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide. • Lead compounds: Temperatures above the melting point are 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	Will not occur.

11. TOXICOLOGICAL INFORMATION

NOTE: Under normal conditions of use, this product does not present a health hazard. The following information is provided for organic electrolyte and lead exposure that may occur due to container breakage or under extreme conditions such as fire.

Organic electrolyte – reacts with moisture / water to produce hydrofluoric acid in trace quantities. Hydrofluoric acid is extremely corrosive and toxic. In severe exposures it acts as a systemic poison and causes severe burns. The reaction may be delayed. Any contact with this material, even minor, requires immediate medical attention.

ROUTES AND METHODS OF ENTRY

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.
Skin Contact	• Sulfuric Acid: Severe irritation, burns and ulceration. • Lead Compounds: Not absorbed through the skin.
Skin Absorption	In the event of overcharging or damage to the unit, exposure to organic electrolyte solution / mist is possible. Extreme exposures to the organic electrolyte can be absorbed through the skin.
Eye Contact	• Sulfuric Acid: Severe irritation, burns, cornea damage, and blindness. • Lead Compounds: May cause eye irritation.
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.

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

SIGNS AND SYMPTONS OF OVEREXPOSURE

Acute Effects	• 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.
Chronic Effects	• Sulfuric Acid: Possible erosion of tooth enamel, inflammation of nose, throat & bronchial tubes. • Lead Compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in males and females. Repeated exposure to lead and lead compounds in the workplace may result in nervous system toxicity. Some toxicologists report abnormal conduction velocities in persons with blood lead levels of 50 µg/100 ml or higher. Heavy lead exposure may result in central nervous system damage, encephalopathy and damage to the blood-forming (hematopoietic) tissues.

EXPOSURE IS NOT EXPECTED FOR PRODUCT UNDER NORMAL CONDITIONS OF USE.

MEDICAL CONDITIONS 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.

ADDITIONAL HEALTH DATA

All heavy metals, including the hazardous ingredients in this product, are taken into the body primarily by inhalation and ingestion. Most inhalation problems can be avoided by adequate precautions such as ventilation and respiratory protection covered in Section 8. Follow good personal hygiene to avoid inhalation and ingestion: wash hands, face, neck and arms thoroughly before eating, smoking or leaving the work site. Keep contaminated clothing out of non-contaminated areas, or wear cover clothing when in such areas. Restrict the use and presence of food, tobacco and cosmetics to non-contaminated areas. Work clothes and work equipment used in contaminated areas must remain in designated areas and never taken home or laundered with personal non-contaminated clothing. This product is intended for industrial use only and should be isolated from children and their environment.

The 19th Amendment to EC Directive 67/548/EEC classified lead compounds, but not lead in metal form, as possibly toxic to reproduction. Risk phrase 61: May cause harm to the unborn child, applies to lead compounds, especially soluble forms.

Toxicological Data

Constituents	Lead (CAS 7439-92-1)	Sulfuric Acid (CAS 7664-93-9)
Species	Rat	Rat
Test Results	1050 ug/kg	2140 mg/kg
Acute oral toxicity	TDLo	LD50
Skin corrosion / irritation	Electrolyte: Causes severe skin burns	
Serious eye damage / eye irritation	Electrolyte: Causes severe eye damage	
Respiratory Sensitization	Not Classified	
Skin Sensitization	Not a skin sensitizer	
Germ Cell Mutagenicity	No data available	

CARCINOGENICITY

Under normal handling and storage conditions, the exposure to carcinogenic components is not expected. Risk of adverse effects occurs only if the cell is mechanically, thermally, or electrically abused to the point of compromising the enclosure.

- 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.

Carcinogenic Effects			
	CAS Number	**IARC**	**NTP**
Sulfuric acid	7664-93-9	Group 1-Carcinogenic	Not established
Lead	7439-92-1	Group 2B-Possibly carcinogenic to humans.	Reasonably anticipated to be human carcinogen

- **OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050 / 1200)**
  Not listed.

Reproductive toxicity	May damage fertility or the unborn child.
Specific target organ toxicity - single exposure	No data available.
Specific target organ toxicity - repeated exposure	Lead: May cause damage to organs (blood, central nervous system) through prolonged or repeated exposure.
Aspiration hazard	Not classified.

12. ECOLOGICAL INFORMATION

- **Environmental Fate**
  Lead is very persistent in soil and sediments. No data on environmental degradation. Mobility of metallic lead between ecological compartments is slow. Bioaccumulation of lead occurs in aquatic and terrestrial animals and plants but little bioaccumulation occurs through the food chain. Most studies include lead compounds and not elemental lead.

- **Ecotoxicity**
  Very toxic to aquatic life with long lasting effects. However, no ecological impacts expected under normal use conditions.

Constituents	Inorganic Lead / Lead Compounds (CAS 7439-92-1)
Species	Rainbow trout, Donaldson trout (Oncorhynchus mykiss)
Test Results	1.17 mg/l, 96 hours
Aquatic	Fish LC50
Persistence and Degradability	No data available
Bioaccumulative potential	No data available
Additional Information	No known effects on stratospheric ozone depletion Volatile organic compounds: 0% (by Volume) Water Endangering Class (WGK): NA

13. DISPOSAL CONSIDERATIONS

Waste disposal method	Material should be recycled if possible. Lead-acid batteries are completely recyclable. Product can be recycled along with automotive (SLI) lead-acid batteries. Dispose waste and residues in accordance with applicable federal, state, and local regulations.
Hazardous waste code	D008: Lead
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or packaging may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

NOTE: Please refer to current shipping paper for most up to date shipping information, including exemptions and special circumstances.

United States DOT	Not regulated as dangerous goods per 49 CFR 173.159a
IATA	Please contact manufacturer for most current information
IMDG	Not regulated as dangerous goods per exception 238

15. REGULATORY INFORMATION

This product is an article pursuant to 29 CFR 1910.1200 and as such is not subjected to the OSHA Hazard Communication Standard.

TSCA

Ingredients listed in the TSCA registry are lead, lead compounds, and sulfuric acid.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Lead (CAS 7439-92-1)	Reproductive toxicity Central nervous system Kidney Blood Acute toxicity

CERCLA Hazardous Substance List (40 CFR 302.4)

Lead (CAS 7439-92-1)	LISTED
Sulfuric Acid (CAS 7664-93-9)	LISTED

Superfund Amendment and Reauthorization Act of 1986 (SARA)

Hazard Categories	Immediate Hazard – Yes Delayed Hazard – Yes Fire Hazard – Yes Pressure Hazard – Yes Reactivity Hazard – Yes

SARA 302 Extremely hazardous substance

Chemical Name	CAS Number	Weight-%	Reportable Quantity	Threshold Planning Quantity
Sulfuric Acid	7664-93-9	30-40	1000 lb EPCRA RQ	1000 lb TPQ
Water	7732-18-5	60-70	Not Listed	Not Listed

- **Section 311 / 312 Hazard Categorization**

  EPCRA Section 312 Tier Two reporting is required for non-automotive 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. For more information consult 40 CFR 370.10 and 40 CFR 370.40.

- **Section 313 EPCRA Toxic Substances**

  40 cfr section 372.38 (b) states: If a toxic chemical is present in an article at a covered facility, a person is not required to consider the quantity of the toxic chemical present in such article when determining whether an applicable threshold has been met under § 372.25, § 372.27, or § 372.28 or determining the amount of release to be reported under § 372.30. This exemption applies whether the person received the article from another person or the person produced the article. However, this exemption applies only to the quantity of the toxic chemical present in the article.

Chemical Name	CAS Number	% by Weight
Lead	7439-92-1	60-85

Other Federal Regulations

Lead (CAS 7439-92-1)	**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**
Sulfuric Acid (CAS 7664-93-9)	**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

- **Safe Drinking Water Act (SDWA)**
  Not regulated

- **Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number**
  Sulfuric Acid (CAS 7664-93-9), 6552

- **Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))**
  Sulfuric Acid (CAS 7664-93-9), 20 % WV

- **DEA Exempt Chemical Mixtures Code Number**
  Sulfuric Acid (CAS 7664-93-9), 6552

US State Regulations

Lead (CAS 7439-92-1) Sulfuric Acid (CAS 7664-93-9)	**US Massachusetts RTK – Substance List**
	US New Jersey Worker and Community Right-to-know Act
	US Pennsylvania Worker and Community Right-to-know Law
	US Rhode Island RTK

- **US California Proposition 65**
  WARNING: Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer, birth defects and other reproductive harm. Batteries also contain other chemicals known to the State of California to cause cancer. **Wash hands after handling.**

* Battery companies not party to the 1999 consent judgment with Mateel Environmental Justice Foundation should include a Proposition 65 Warning that complies with the current version of Proposition 65.

- **US California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance**

Chemical Name	CAS Number	% by Weight
Lead	7439-92-1	60-85
Sulfuric Acid	7664-93-9	10-28
Arsenic (as arsenic oxides)	7440-38-2	<0.01

International Inventories

Country(s) or Region	Inventory Name	On inventory (yes / no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*** A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).**
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

- **Canadian Domestic Substance List (DSL)**
  All ingredients remaining in the finished product as distributed into commerce are included on the Domestic Substances List.
  WHMIS Classifications

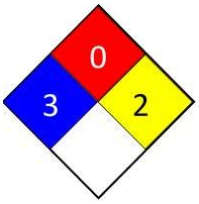
  This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Controlled Products Regulations.
  NPRI and Ontario Regulation 127/01
  This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/or Ont. Reg. 127/01:

Chemical Name	CAS Number	% by Weight
Lead	7439-92-1	60-85

- **European Inventory of Existing Commercial Chemical Substances (EINECS)**
  All ingredients remaining in the finished product as distributed into commerce are exempt from, or included on, the European Inventory of Existing Commercial Chemical Substances.
  REACH: Contains more than 0.1% lead monoxide. Lead Monoxide (CAS: 1317-36-8) is listed as a substance of very high concern (SVHC) under EU REACH regulation annex XIV.
  European Communities (EC) Hazard Classification according to directives 67/548/EEC and 1999/45/EC.

R-Phrases	S-Phrases
23/25	1/2, 20/21, S28

16. OTHER INFORMATION

Issue Date	06/01/2015
Revision Date	-
Version #	01
Further information	NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe
NFPA ratings	

DISCLAIMER:
This Safety Data Sheet is based upon information and sources available at the time of preparation or revision date. Information in the SDS was obtained from sources which we believe are reliable, but are beyond our direct supervision or control. We make no Warranty of Merchantability, Fitness for any particular purpose or any other Warranty, Expressed or Implied, with respect to such information and we assume no liability resulting from its use. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product. It is the obligation of each user of this product to determine the suitability of this product and comply with the requirements of all applicable laws regarding use and disposal of this product. For additional information concerning Yacht Battery Co., Ltd. products or questions concerning the contents of this SDS please contact your Yacht representative.

Safety Data Sheet (SDS)

1. IDENTIFICATION

Issue Date: 06/01/2015, SDS # 004, Version #: 01

Product Name	Battery Acid
Synonyms	Battery Electrolyte (Acid) , Sulfuric Acid (Dilute)
Product Use	Used to Activate Dry Batteries
Manufacturer / Supplier / Address	**Yacht Battery Co., Ltd.** 4F-5, No. 925, Sec. 4, Taiwan Blvd., Taichung, 40767 Taiwan, R.O.C. **Yacht Technology (Vietnam), Co., Ltd.** Lot_A9H_CN, Bau Bang Industrial Park, Bau Bang District, Binh Duong Province, Vietnam www.yacht-battery.com
Transportation Emergency Number	Infotrac (24-Hour Emergency Contact Number) 1-800-535-5053 (North America) 1-352-323-3500 (International)

NOTE: The Yacht battery is considered an article as defined by 29 CFR 1910.1200 (OSHA Hazard Communication Standard). The information contained in this SDS is supplied at the customer's request for information only.

2. GHS HAZARD(S) IDENTIFICATION

Health		**Physical**
Skin corrosion / irritation	Category 1	Corrosive to metals, Category 1
Series eye damage / eye irritation	Category 1	
Carcinogenicity	Category 1A	
Specific target organ toxicity, Single exposure	Category 3 Respiratory Tract irritation	

GHS Label Elements:

DANGER!

DANGER!

- May be corrosive to metals.
- Causes severe skin burns and eye damage.
- May cause cancer.
- May cause respiratory irritation.

- **Precautionary Statements**

Prevention	Do not breathe vapor or mist. Wash thoroughly after handling.
Response	If swallowed: Rinse mouth. Do NOT induce vomiting. If inhaled: Immediately, remove person to fresh air. If breathing difficulties develop, obtain medical treatment. If on skin (or hair): Immediately remove all contaminated clothing. Rinse skin with water / shower. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a poison center / doctor. Wash contaminated clothing before reuse. If exposed or concerned: Get medical advice / attention. Absorb spillage to prevent material damage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store in corrosive resistant container with a resistant inner line. Store locked up.
Disposal	Dispose of contents / container in accordance with local / regional / national / international regulations.

3. COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENTS (Chemical / Common Names)	CAS Number	% by Weight
Electrolyte (H_2SO_4 / H_2O)	7664-93-9	30-40
Water	7732-18-5	60-70

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

Inhalation	IF INHALED: Immediately remove person to fresh air. Immediately call a poison control center or doctor for treatment advice.
Skin contact	Immediately take off all contaminated clothing. Rinse skin with water / shower. Call a physician or poison control center immediately. Chemical burns must be treated by a physician.
Eye contact	Immediately flush eyes for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Call a physician or poison control center immediately. Rinse mouth. DO not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into lungs.
Most important symptoms / effects, acute and delayed	Burning pain and severe corrosive skin damage. May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Chemical burns: flush with water immediately. While flushing, remove clothes which do not adhere to affected areas. Call an ambulance. Continue flushing during transport to hospital. Keep victim under observation. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.
Self-protection of the first aider	If artificial respiration is required, use a pocket mask equipped with a one-way valve or other proper respiratory medical device.

5. FIRE FIGHTING MEASURES

Suitable extinguishing media	CO2 ; foam; dry chemical. Trained fire-fighters may use water spray under certain conditions.
Unsuitable extinguishing media	Do not use water jet as an extinguisher as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Sulfuric acid will not burn, but is capable of igniting finely divided combustible materials on contact. Use dry chemical agents to smother combustible materials. Avoid breathing mists and vapors. Use full protective equipment (acid-resistant bunker gear) and self-contained breathing apparatus.
Unusual fire and explosion hazards	Battery fluid can evolve flammable hydrogen gas when exposed to metals (such as during charging of lead acid batteries) and may increase the fire risk near sparks, excessive heat or open flames. See Section 10 for list of fire by-products.
Specific hazards in case of fire	Battery Electrolyte (Sulfuric Acid) is corrosive.
Additional information	Reacts violently with metals, nitrates, chlorates, carbides and other organic materials. Reacts with most metals to yield explosive flammable hydrogen gas.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency preparedness	Keep unnecessary personnel away. Keep people away from and upwind of spill / leak. Keep out of low areas. Wear appropriate protective equipment and clothing during clean-up. Do not breathe mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS. If toxic vapors are produced at unknown concentrations, wear a NIOSH-approved respirator or SCBA.
Methods and materials for containment and cleaning up	Large spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Absorb in vermiculite, dry sand, or earth and place in containers. Prevent entry into waterways, sewer, basements or confined areas. Small spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination. Use clay, sand, or diatomaceous earth. Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains, water courses, or onto the ground.

7. HANDLING AND STORAGE

Handling	Do not breathe vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial practices.
Storage	Store locked up. Store in original tightly closed container. Store away from incompatible materials. Keep away from heat, sparks, and open flame. (See section 10 of the SDS)

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Occupational exposure limits (mg/m³)

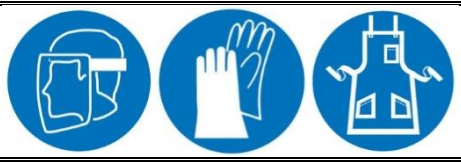
Ingredient	CAS Number	OSHA PEL	ACGIH	US NIOSH	Quebec PEV	Ontario OEL	EU OEL
Sulfuric Acid (Dilute)	7664-93-9	1	0.2	1	1	0.2	0.05 (a)

NOTES:
(a) Thoracic fraction

- **OSHA:** US OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)
- **ACGIH:** US ACGIH Threshold Limit Values
- **NIOSH:** US NIOSH Pocket Guide to Chemical Hazards

Biological limit values

No biological exposure limits noted for the ingredient(s).

Engineering Controls (Ventilation)	Good ventilation required (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewashes station.
Personal protective equipmen (Pictograms)	
Respiratory Protection	NONE REQUIRED UNDER NORMAL HANDLING CONDITIONS When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.
Skin Protection	Wear appropriate chemical resistant gloves and clothing.
Eye Protection	Wear safety glasses with side shields (or goggles). Face shield is recommended.
General Hygiene Considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and / or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid
Color	Clear / cloudy liquid
Odor	Slightly acid
Odor Threshold	Not available
pH	<1.0
Melting Point	-79.6 °F / -62 °C Not applicable unless individual components exposed.
Boiling Point	230 °F / 110 °C Not applicable unless individual components exposed.
Flash Point	Not available
Evaporation Rate (Butyl Acetate = 1)	Not determined
Flammability	Not available
Upper / lower flammability or explosive limits	Hydrogen — Flammability Limit Lower – 4 % Flammability Limit Upper – 74 %
Vapor Pressure (mm Hg @ 20 ° C)	11.7
Vapor Density	Not available (Air = 1)
Relative Density	1.28 / 1.32
Solubility	100%
% Volatile by Weight	0%
Partition coefficient (n-octanol / water)	Not available
Auto-ignition temperature	932° F (500°C) (as hydrogen gas)
Decomposition temperature	Not available
Viscosity	Not available

10. STABILITY AND REACTIVITY

Reactivity	This product is stable and non-reactive under normal conditions of use, storage, and transport.
Stability	Material is stable under normal conditions.
Conditions to Avoid	Keep away from heat, sparks, open flames, and / or hot surfaces. No smoking. Contact with incompatible materials.
Incompatibility (materials to avoid)	Strong reducing agents. Reacts with organic materials. Combustibles. Metals. Carbides. Nitrates.
Hazardous Decomposition Products	Sulfur dioxide (SO_2) Sulfur trioxide. Hydrogen.
Hazardous Polymerization	Will not occur.

11. TOXICOLOGICAL INFORMATION

INFORMATION ON LIKELY ROUTES OF EXPOSURE

Inhalation	Corrosive. Inhalation produces damaging effects on the mucous membranes and upper respiratory tract. Inhalation of vapors may cause lung edema. Prolonged inhalation may be harmful.
Skin Contact	Causes severe skins burns. Prolonged skin contact may cause dermatitis.
Eye Contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns.
Symptoms related to the physical, chemical, and toxicological characteristics	Burning pain and severe corrosive skin damage. May cause severe irritation or burns to the eyes, skin, gastrointestinal tract, and respiratory system. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

INFORMATION ON TOXICOLOGICAL EFFECTS

Acute Effects	Occupational exposure to the substance or mixture may cause adverse effects.
Chronic Effects	Prolonged inhalation may be harmful. Sulfuric acid fumes: Prolonged, repeated exposure to acid fumes / mists may cause chronic bronchitis, irritation of skin, mucous membranes and gastrointestinal tract and erosion of the teeth.

Toxicological Data

Constituents	Sulfuric Acid absorbed in glass-fiber material (CAS 7664-93-9)	
Species	Rat	
Test Results	2140 mg/kg	510 mg/m3
Acute oral toxicity	LD50	LC50
Skin corrosion / irritation	Causes severe skin burns	
Serious eye damage / eye irritation	Causes severe eye damage	
Respiratory Sensitization	No data available	
Skin Sensitization	Not a skin sensitizer	
Germ Cell Mutagenicity	No data available to indicate product or any components present a greater than 0.1% are mutagenic or genotoxic.	

CARCINOGENICITY

Mist: May cause cancer by inhalation
ACGIH Group A2 (Suspected human carcinogen)

Carcinogenic Effects			
	CAS Number	**IARC**	**NTP**
Sulfuric acid	7664-93-9	Group 1-Carcinogenic	Not established

- **OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050 / 1200)**

  Not listed.

Reproductive toxicity	This product is not expected to cause reproductive or developmental effects.
Specific target organ toxicity - single exposure	Not classified
Specific target organ toxicity - repeated exposure	Not classified
Aspiration hazard	Not classified

12. ECOLOGICAL INFORMATION

Persistence and degradability	Sulfuric acid is reactive and not very persistent in the ecosystem.
Bio-Accumulative potential (including Mobility)	Very high mobility and solubility indicate very low risk of bioaccumulation.
Aquatic toxicity (test results and comments)	24-hr LC50, fresh water fish (Brachydanio rerio): 82 mg/l 96-hr LOEC, fresh water fish (Cyprinus carpio): 22 mg/l (lowest observable effect concentration)
Additional Information	No known effects on stratospheric ozone depletion. Volatile organic compounds: 0% (by Volume) Water Endangering Class (WGK): NA

13. DISPOSAL CONSIDERATIONS

Disposal Instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents / container in accordance with local / regional / national / international regulations.
Hazardous waste code	D002: Corrosive waste The waste code should be assigned in discussion between the user, the producer, and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or lines may retain some product residues. This material and its container must be disposed of in a safe manner. (see: Disposal Instructions)
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

Ground – US-DOT / CAN-TDG / EU-ADR / APEC-ADR

Proper shipping name		Battery fluid, acid	
Hazard class	8	**ID number**	UN2796
Packing group	II	**Labels**	Corrosive

Aircraft – ICAO-IATA

Proper shipping name		Battery fluid, acid	
Hazard class	8	**ID number**	UN2796
Packing group	II	**Labels**	Corrosive

Reference IATA packing instructions Y840, 851, 855

Vessel – IMO-IMDG

Proper shipping name		Battery fluid, acid	
Hazard class	8	**ID number**	UN2796
Packing group	II	**Labels**	Corrosive

Reference IMDG packing instructions P001.

15. REGULATORY INFORMATION

US Federal Regulations

All components are on the U.S. EPA TSCA Inventory List
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200

TSCA

- **TSCA Section 8b Inventory Status**
  All chemicals comprising this product are either exempt or listed on the TSCA Inventory.
- **TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**
  Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

Sulfuric Acid (Dilute) (CAS 7664-93-9)	LISTED

Superfund Amendment and Reauthorization Act of 1986 (SARA)

Hazard Categories	Immediate Hazard – Yes Delayed Hazard – No Fire Hazard – No Pressure Hazard – No Reactivity Hazard – No

SARA 302 Extremely hazardous substance

Chemical Name	CAS Number	Weight-%	Reportable Quantity	Threshold Planning Quantity
Sulfuric Acid (dilute)	7664-93-9	30-40	1000 lb EPCRA RQ	1000 lb TPQ
Water	7732-18-5	60-70	Not Listed	Not Listed

- **Section 311/312 Hazard Chemical:** Yes
- **Section 313 (TRI Reporting)**

Chemical Name	CAS Number	% by Weight
Sulfuric Acid (Dilute)	7664-93-9	30-40

Other Federal Regulations

- **Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**
  Not regulated

- **Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**
  Sulfuric Acid (Dilute) (CAS 7664-93-9)

- **Safe Drinking Water Act (SDWA)**

  Not regulated

- **Drug Enforcement Administration (DEA). List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.04(f)(2) and Chemical Code Number**

  Sulfuric Acid (Dilute) (CAS 7664-93-9), 6552

- **Drug Enforcement Administration (DEA). List 1 & 2 Exempt Chemical Mixtures (21 CFR 1310.12(c))**

  Sulfuric Acid (Dilute) (CAS 7664-93-9), 20 % WV

- **DEA Exempt Chemical Mixtures Code Number**

  Sulfuric Acid (Dilute) (CAS 7664-93-9), 6552

US State Regulations

Sulfuric Acid (Dilute) (CAS 7664-93-9)	**US. Massachusetts RTK – Substance List**
	US New Jersey Worker and Community Right-to-know Act
	US Pennsylvania Worker and Community Right-to-know Law
	US Rhode Island RTK

- **US. California Proposition 65**

  The following chemicals identified to exist in the finished product as distributed into commerce are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Chemical Name	CAS Number	% by Weight
Strong inorganic acid mists including sulfuric acid	NA	30-40

California Consumer Product Volatile Organic Compound Emissions

International Inventories

Country(s) or Region	Inventory Name	On inventory (yes / no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*** A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).**
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

- **Canadian Domestic Substance List (DSL)**

  All ingredients remaining in the finished product as distributed into commerce are included on the Domestic Substances List.

  WHMIS Classifications

  Class E: Corrosive materials present at greater than 1%
  This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the Controlled Products Regulations.

- **NPRI and Ontario Regulation 127/01**

  This product contains the following chemicals subject to the reporting requirements of Canada NPRI +/or Ont. Reg. 127/01:

Chemical Name	CAS Number	% by Weight
None	NA	NA

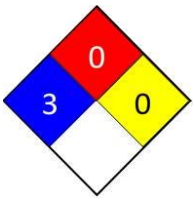
- **European Inventory of Existing Commercial Chemical Substances (EINECS)**
  All ingredients remaining in the finished product as distributed into commerce are exempt from, or included on, the European Inventory of Exisiting Commercial Chemical Substances.

European Communities (EC) Hazard Classification according to directives 67/548/EEC and 1999/45/EC.

H	P
H314	P264, P280, P301+P330+P331, P303+P361+P353, P305+P351+P338

Relevant H-, P- number and full text
Hazard Abbreviations:
C: Corrosive
Hazard statements:
H314: Causes severe skin burns and eye damage.
Precautionary statements:
P264: Wash hands thoroughly after handling.
P280: Wear protective gloves / protective clothing / eye protection / face protection.
P301+P330+P331:
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353:
IF ON SKIN (or hair): Remove / Immediately remove all contaminated clothing. Rinse skin with water / shower.
P305+P351+P338:
IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.

16. OTHER INFORMATION

Issue Date	06/01/2015
Revision Date	-
Version #	01
Further information	NFPA Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe
NFPA ratings	

DISCLAIMER:
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