

I. PRODUCT IDENTIFICATION

Chemical Trade Name (as used on label): Battery Electrolyte	Chemical Family/Classification: Acid / Corrosive
Manufacturer's Name/Address: EnerSys P.O. Box 14145 2366 Bernville Road Reading, PA 19612-4145	Telephone: For information and emergencies, contact EnerSys' Environmental, Health & Safety Dept. at (610) 208-1996 24-Hour Emergency Response Contact: CHEMTREC DOMESTIC: 800-424-9300 CHEMTREC INTERNATIONAL: 703-527-3877

II. HAZARDOUS INGREDIENTS/IDENTIFY INFORMATION

Components	OSHA PEL	ACGIH TLV	% (Optional)
Sulfuric Acid	1000 ug/m ³	1000 ug/m ³	30 - 40
Water (H ₂ O)	--	--	60 - 70
CAS # 7664-93-9			
NFPA Hazard Rating: Flammability (Red) = 0 Health (Blue) = 3 Reactivity (Yellow) = 2			

Sulfuric acid is water-reactive if concentrated.

III. PHYSICAL DATA

Electrolyte:

Boiling Point:	203 - 240° F	Specific Gravity (H₂O = 1):	1.215 to 1.350
Melting Point:	N/A	Vapor Pressure (mm Hg):	10
Solubility in Water:	100%	Vapor Density (AIR = 1):	Greater than 1
Evaporation Rate: (Butyl Acetate = 1)	Less than 1	% Volatile by Weight:	N/A
Appearance and Odor:	Electrolyte is a clear liquid with a sharp, penetrating, pungent odor.		

IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A	Flammable Limits: LEL = N/A	UEL = N/A
Extinguishing Media: CO ₂ ; foam; dry chemical; water; water fog.		

Special Fire Fighting Procedures:

Water applied to sulfuric acid generates heat and causes acid to splatter. Wear full-cover sulfuric acid resistant clothing.

Unusual Fire and Explosion Hazards:

Reacts violently with metals, nitrates, chlorates, carbides and other organic materials. Reacts with most metals to yield explosive and flammable hydrogen gas.

V. REACTIVITY DATA

Stability: 100% Stable
Conditions To Avoid: Contact with organic materials, combustibles, strong reducing agents, metals, strong oxidizers, water.
Incompatibility: (Materials to avoid) Contact with metals may produce toxic sulfur dioxide fumes and/or hydrogen gas.

Hazardous Decomposition Products:

Sulfur trioxide, carbon monoxide, sulfuric acid fumes, sulfur dioxide.

Hazardous Polymerization:

Will not occur.

VI. HEALTH HAZARD DATA

Routes of Entry: Sulfuric acid is harmful by all routes of entry.
Inhalation: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.
Ingestion: May cause severe irritation of mouth, throat, esophagus and stomach.
Skin Contact: Severe irritation, burns and ulceration.
Eye Contact: Severe irritation, burns, cornea damage, and blindness.
Effects of Overexposure - Acute: Severe skin irritation, damage to cornea, upper respiratory irritation.
Effects of Overexposure - Chronic: Erosion of tooth enamel, inflammation of nose, throat and bronchial tubes.



MATERIAL SAFETY DATA SHEET

Form # MSDS 853022
Revised: 06/06/2013
Supersedes: 05/01/2011
ECO #: 1001294

VI. HEALTH HAZARD DATA (Cont.)

Carcinogenicity: 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.

Symptoms of Exposure: Cough; increased respiratory rate; stinging, burning sensation on skin; eye irritation; discoloration of teeth.

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.

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Remove to fresh air immediately. If breathing is difficult, give oxygen.

Ingestion: Give large quantities of water; do not induce vomiting; consult physician.

Skin: Flush with large amounts of cool water for at least 15 minutes; remove contaminated clothing completely, including shoes.

Eyes: Flush immediately with large amounts of water for a least 15 minutes; consult physician.

Proposition 65: Warning: Sulfuric Acid Mist is known to the State of California to cause cancer.

VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Spill or Leak Procedures: Stop flow of material, contain/absorb small spills with dry sand, earth or 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: Place neutralized slurry into sealed containers and dispose of as hazardous waste, as applicable. Large water-diluted spills, after neutralization and testing, should be managed in accordance with local, state and federal requirements. Consult state environmental agency and/or federal EPA.

Handling and Storage: Handle cautiously; avoid contact with skin and eyes. Storage and handling areas should be equipped with proper containment to capture and neutralize spills. In addition, these areas should be equipped with eyewash stations and safety showers.

Precautionary Labeling: POISON - CAUSES SEVERE BURNS DANGER - CONTAINS SULFURIC ACID

VIII. CONTROL MEASURES

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

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

Eye Protection: 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.

IX. OTHER REGULATORY INFORMATION

NFPA Hazard Rating for sulfuric acid: Flammability (Red) = 0 Reactivity (Yellow) = 2
Health (Blue) = 3 Sulfuric acid is water-reactive if concentrated.

US DOT: The shipping information is as follows:
Proper Shipping Name: Battery Fluid, Acid Packing Group: II
Hazardous Class: 8 Label/Placard Required: Corrosive
UN Identification: UN2796
Reference 49CFR packing instructions: 173.154 or 173.202 or 173.242

IX. OTHER REGULATORY INFORMATION (Cont.)

IATA:

The shipping information is as follows:

Proper Shipping Name: Battery Fluid, Acid
 Hazardous Class: 8
 UN Identification: UN2796

Packing Group: II
 Label/Placard Required: Corrosive

Reference IATA packing instructions Y840 or 851 or 855

IMDG:

The shipping information is as follows:

Proper Shipping Name: Battery Fluid, Acid
 Hazardous Class: 8
 UN Identification: UN2796

Packing Group: II
 Label/Placard Required: Corrosive

Reference IMDG Packing instructions P001

RCRA:

Spilled sulfuric acid is characterized as a hazardous waste; EPA hazardous waste number D002 (corrosivity).

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:

<u>Toxic Chemical</u>	<u>CAS Number</u>	<u>Approximate % by Wt.</u>
Sulfuric Acid	7664-93-9	30 - 40

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.

TSCA:

Ingredients in battery electrolyte are listed in the BCA Registry as follows:

<u>Components</u>	<u>CAS Number</u>	<u>TSCA Status</u>
Sulfuric Acid (H ₂ SO ₄)	7664-93-9	Listed

CAA:

EnerSys 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, EnerSys established a policy to eliminate the use of Class I ODC's prior to the May 15, 1993 deadline.