



US - OSHA SAFETY DATA SHEET

Issue Date 25-Nov-2014

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Version 4

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING**Product identifier****Product Name** Battery Electrolyte**Other means of identification****Product Code** 853022**UN/ID No.** UN2796**Synonyms** Not available.**Recommended use of the chemical and restrictions on use****Recommended Use** Used to activate dry batteries.**Uses Advised Against** Any other not listed above**Details of the supplier of the safety data sheet****Supplier Address**Yuasa Battery, Inc.
2901 Montrose Avenue
Laureldale, PA 19605
United States
www.yuasabatteries.com**Emergency telephone number****Company Phone Number** (610) 929-5781**24 Hour Emergency Phone Number** CHEMTREC:
Domestic (800) 424-9300
International 1(703) 527-3887**2. HAZARDS IDENTIFICATION****Classification****Health Hazards**

Skin Corrosion/Irritation	Category 1 Sub-category A
Serious Eye Damage/Eye Irritation	Category 1

Physical Hazards

Not classified.

Other information

Highly concentrated electrolyte may adversely affect living things such as animals and plants.

Label elements**Emergency
Overview****Danger****Hazard Statements**

Fatal if inhaled.

Causes severe skin burns and eye damage.

**Appearance** Clear liquid.
Pungent**Physical State** Liquid.**Odor****Precautionary Statements - Prevention**

Wear protective gloves/clothing/eye protection/face protection.

Do not breathe dust/fume/gas/mist/vapors/spray.

Use only outdoors or in a well-ventilated area.

Wear respiratory protection

Wash face, hands and any exposed skin thoroughly after handling.

Precautionary Statements - Response

Specific treatment is urgent.

Immediately call a POISON CENTER or doctor.

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 or doctor.

Wash contaminated clothing before reuse.

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower

Take off contaminated clothing and wash it before reuse.

IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Immediately call a POISON CENTER or doctor.

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting.

Precautionary Statements - Storage

Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal facility.

Hazards not otherwise classified (HNOC)

Not available.

Other information

Highly concentrated electrolyte may adversely affect living things such as animals and plants.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This product is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200; Revision 3).

Chemical Name	CAS No.	Weight-%
Sulfuric acid	7664-93-9	36-45

*Note: Non-hazardous chemical ingredients are not listed

4. FIRST AID MEASURES

First aid measures

Eye Contact	In case of eye contact, immediately flush eyes with fresh water for at least 15 minutes while holding the eyelids open. Remove contact lenses if worn. Get medical attention if irritation persists. Immediate medical attention is required.
Skin Contact	For minor skin contact, avoid spreading material on unaffected skin. In case of contact with substance, immediately flush skin with running water for at least 20 minutes. Remove and isolate contaminated clothing and shoes. Immediate medical attention is not required.
Inhalation	Immediately move exposed subject to fresh air. If not breathing, provide artificial respiration. If breathing is difficult, administer oxygen. Seek medical attention immediately.
Ingestion	In case of accidental ingestion, wash out mouth with copious amounts of water. Seek medical attention immediately. Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.
Self-Protection of the First Aider	Do not use mouth-to-mouth methods if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or another proper respiratory medical device.

Most important symptoms and effects, both acute and delayed

Symptoms	Inhalation: Corrosive. Burning sensation. Sore throat. Cough. Labored breathing. Shortness of breath. Symptoms may be delayed. Skin: Corrosive. Redness. Pain. Blisters. Serious skin burns. Eyes: Corrosive. Redness. Pain. Severe deep burns.
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Indication of any immediate medical attention and special treatment needed

Note to Physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Small Fire	Dry chemical, CO ₂ , or water spray.
Large Fire	Dry chemical or CO ₂ , alcohol - resistant foam or water spray.
Unsuitable Extinguishing Media	Any not listed above.

Specific hazards arising from the chemical

Hazardous decomposition products formed: Sulfur oxides (SO_x).

Hazardous Combustion Products	Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive fumes.
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Explosion data

Sensitivity to Mechanical Impact	None known.
Sensitivity to Static Discharge	None known.

Protective equipment and precautions for firefighters

Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible. Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep out of low areas. Keep unauthorized personnel away. Stay upwind.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Ventilate enclosed areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.
Other information	Non-emergency personnel should utilize chemical gloves.
For emergency responders	Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area) as an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Do not get water inside container. Personal protective equipment: Wear chemical gloves, goggles, acid resistant clothing and boots, respirator if insufficient ventilation.

Environmental precautions

Environmental Precautions	Prevent entry into waterways, sewers, basements or confined areas. See Section 12 for additional ecological information.
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Methods and material for containment and cleaning up

Methods for Containment	Stop leak if you can do it without risk. Absorb with earth sand or other non-combustible material. Do not allow discharge of non-neutralized acid to sewer. Cautiously neutralize spilled liquid.
Methods for Cleaning Up	Dispose of in accordance with local, state, and national regulations.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling	Handle and open container with care. Avoid contact with skin and eyes. Use only with adequate ventilation. Use caution when combining with water; DO NOT add water to corrosive liquid, ALWAYS add corrosive liquid to water while stirring to prevent release of heat, steam and fumes. Do not get in eyes or on skin or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco. Eyewash stations and safety showers should be provided with unlimited water supply. Handle in accordance with good industrial hygiene and safety practice.
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Conditions for safe storage, including any incompatibilities

Storage Conditions	Keep away from incompatible materials. Store locked up. Keep container/package tightly closed in a cool, well-ventilated place. Ventilate enclosed areas. Storage class: Class 8B: Non-flammable corrosive materials.
Incompatible materials	Bases, halides, organic materials, carbides, fulminates, nitrates, picrates, cyanides, chlorates, alkali halides, zinc salts, permanganates, e.g. potassium permanganate, hydrogen peroxide, azides, perchlorates, nitromethane, phosphorous; Reacts violently with: cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous(iii) oxide, powdered metals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines	This product, as supplied, contains the following hazardous materials with occupational exposure limits established by the region-specific regulatory bodies.
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Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Sulfuric acid 7664-93-9	TWA: 0.2 mg/m ³ thoracic particulate matter	TWA: 1 mg/m ³ (vacated) TWA: 1 mg/m ³	IDLH: 15 mg/m ³ TWA: 1 mg/m ³

Appropriate engineering controls**Engineering Controls**

The health hazard risks of handling this material are dependent on factors, such as physical form and quantity. Site-specific risk assessments should be conducted to determine the appropriate exposure control measures. Good general ventilation 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 as low as reasonably achievable.

Individual protection measures, such as personal protective equipment**Eye/Face Protection**

Wear appropriate chemical safety goggles safety glasses, or face shield as described by OSHA eye and face protection regulations in 29 CFR 1910.133 at all times while handling this product. Have eyewash stations available where eye contact can occur.

Skin and Body Protection

Wear protective gloves with elbow length gauntlet. Wear synthetic apron. Under severe exposure or emergency conditions, wear acid-resistant clothing and boots.

Respiratory Protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid.	Odor	Pungent
Appearance	Clear liquid.	Odor Threshold	Not available.
Color	Clear.		

<u>Property</u>	<u>Values</u>	<u>Remarks</u>
pH	Not available.	
Melting Point/Freezing Point	Not available.	
Boiling Point/Boiling Range	95 °C - 95.5556 °C	
Flash Point	Not available.	
Evaporation Rate	Not available.	
Flammability (solid, gas)	Not available.	
Flammability Limit in Air		
Upper Flammability Limit:	Not available.	
Lower Flammability Limit:	Not available.	
Vapor Pressure	10 mmHg	
Vapor Density	1	
Specific Gravity	1.215-1.35	
Water Solubility	Soluble in water.	
Solubility in Other Solvents	Not available.	
Partition Coefficient	Not available.	
Autoignition Temperature	Not available.	
Decomposition Temperature	Not available.	

Kinematic Viscosity Not available.
Dynamic Viscosity Not available.
Explosive Properties Not available.
Oxidizing Properties Not available.

Other information

Softening Point Not available.
Molecular Weight Not available.
VOC Content (%) Not available.
Density 10.1392-11.2658 lbs/gal
Bulk Density Not available.

10. STABILITY AND REACTIVITY**Reactivity**

Reacts with a number of compounds.

Chemical stability

Stable under normal conditions.

Possibility of hazardous reactions

None under normal processing.

Hazardous Polymerization

Hazardous polymerization does not occur.

Conditions to avoid

Contact with organic materials, combustibles, strong reducing agents, metals, strong oxidizers, water.

Incompatible materials

Bases, halides, organic materials, carbides, fulminates, nitrates, picrates, cyanides, chlorates, alkali halides, zinc salts, permanganates, e.g. potassium permanganate, hydrogen peroxide, azides, perchlorates, nitromethane, phosphorous; Reacts violently with: cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous(iii) oxide, powdered metals.

Hazardous decomposition products

Sulfur oxides (SO_x).

11. TOXICOLOGICAL INFORMATION**Product Information****Acute Toxicity**

This product is not classified under Acute Toxicity (Inhalation) as this does not apply for liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50	Intravenous LD50
Sulfuric acid 7664-93-9	= 2140 mg/kg (Rat)	-	85 - 103 mg/m ³ (Rat) 1 h	-

Information on toxicological effects**Symptoms**

Inhalation: Corrosive. Burning sensation. Sore throat. Cough. Labored breathing. Shortness of breath. Symptoms may be delayed. Skin: Corrosive. Redness. Pain. Blisters. Serious skin burns. Eyes: Corrosive. Redness. Pain. Severe deep burns.

Delayed and immediate effects as well as chronic effects from short- and long-term exposure**Skin Corrosion/Irritation**

Causes severe burns to skin.

Serious Eye Damage/Eye Irritation

Corrosive to eyes.

Sensitization	No data available.
Germ Cell Mutagenicity	Sulfuric acid has been shown to be without effect in the Ames test using various strains of <i>S. typhimurium</i> (pH 4 to 9) and <i>E. coli</i> (0.002 to 0.005%), both with and without S9. It has been shown to cause chromosomal aberrations in CHO cells (pH 3.5 to 7.4, both with and without S9), and in a non-standard assay in developing sea urchin embryos.
Carcinogenicity	The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Batteries subjected to abusive charging at excessively high currents for prolonged periods without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

Chemical Name	ACGIH	IARC	NTP	OSHA
Sulfuric acid 7664-93-9	A2	Group 1		X

Reproductive Toxicity	In a developmental toxicity study conducted under a method similar to OECD test Guideline 414, no significant effects on mean numbers of implants/dam, live fetuses/litter or resorptions/litter were observed in mice and rabbits exposed by inhalation to sulfuric acid aerosol at 5 and 20 mg/cu m during gestation..
Developmental Toxicity	No data available.
STOT - Single Exposure	Not classified.
STOT - Repeated Exposure	Not classified.
Aspiration Hazard	Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Sulfuric acid 7664-93-9		500: 96 h <i>Brachydanio rerio</i> mg/L LC50 static		29: 24 h <i>Daphnia magna</i> mg/L EC50

Persistence and degradability

Not available.

Bioaccumulation

Not available.

Mobility

Not available.

Other adverse effects

Not available.

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of Wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
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Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number Not available.

California Hazardous Waste Codes Not available.

This product contains the following substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Sulfuric acid 7664-93-9	Toxic Corrosive

14. TRANSPORT INFORMATION

DOT

UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Subsidiary class 8
Packing Group II
Special Provisions A3, A7, B2, B15, IB2, N6, N34, T8, TP2, 154
 Passenger aircraft/rail: 1.00 L
 Cargo aircraft/rail: 30.00 L

TDG

UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Subsidiary class 8
Packing Group II
Special Provisions
 Explosive Limit and Limited Quantity Index: 1.00
 Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index: 1.00

MEX

Not regulated.

ICAO (air)

UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Packing Group II
Special Provisions -

IATA

UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Packing Group II
Special Provisions -

IMDG

UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Packing Group II
Special Provisions -
Marine pollutant No

RID

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UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Packing Group II
Classification code C1
Special Provisions -
Labels 8

ADR .
UN/ID No. UN2796
Proper shipping name Battery fluid, acid
Hazard Class 8
Packing Group II
Classification code C1
Special Provisions -
Labels 8

ADN Not regulated.

15. REGULATORY INFORMATION

US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No.	Weight-%	SARA 313 - Threshold Values %
Sulfuric acid - 7664-93-9	7664-93-9	36-45	1.0

SARA 311/312 Hazard Categories

Acute Health Hazard No
Chronic Health Hazard No
Fire Hazard No
Sudden Release of Pressure Hazard No
Reactive Hazard No

CWA (Clean Water Act)

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sulfuric acid 7664-93-9	1000 lb			X

CERCLA

This material, as supplied, contains the following substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Sulfuric acid 7664-93-9	1000 lb	1000 lb	RQ 1000 lb final RQ RQ 454 kg final RQ

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product may contain substances regulated by state right-to-know regulations.

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Sulfuric acid 7664-93-9	X	X	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable.

16. OTHER INFORMATION

Prepared By	IES Engineers
Issue Date	25-Nov-2014
Revision Date	23-Sep-2022
Revision Note	Changes in Section 2

Disclaimer

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data or the results to be obtained from the use thereof. Yuasa, Inc. assumes no responsibility for injury to the vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, Yuasa, Inc. assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

End of Safety Data Sheet