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

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>1A</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>1</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>1A</td>
</tr>
</tbody>
</table>

Physical hazards
Not classified
OSHA Regulatory Status
Under United States Regulations (29 CFR 1900.1200 – Hazard Communication standard), this product is considered hazardous. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS). According to the Globally Harmonized Standard for Classification and Labeling (GHS) this product is considered hazardous

Label elements

<table>
<thead>
<tr>
<th>Emergency Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Danger</strong></td>
</tr>
<tr>
<td><strong>Hazard statements</strong></td>
</tr>
<tr>
<td>Causes severe skin burns and eye damage</td>
</tr>
<tr>
<td>May cause cancer</td>
</tr>
</tbody>
</table>

| Appearance | Clear liquid. |
| Physical state | Liquid |
| Odor | Pungent |

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Do not breathe dust/fume/gas/mist/vapors/spray
Wash face, hands and any exposed skin thoroughly after handling

Precautionary Statements - Response
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF IN EYES: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF ON SKIN (or hair): Immediately remove/take off all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

Precautionary Statements - Storage
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Other Information
May be harmful if swallowed.
Unknown Acute Toxicity 65% of the mixture consists of ingredient(s) of unknown toxicity
3. COMPOSITION/INFORMATION ON INGREDIENTS

Under United States Regulations (29 CFR 1900.1200 – Hazard Communication standard), this product is considered hazardous. In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS). According to the Globally Harmonized Standard for Classification and Labeling (GHS) this product is considered hazardous.

Synonyms Not available.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>7664-93-9</td>
<td>30-40</td>
</tr>
</tbody>
</table>

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.

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.

Inhalation
In case of inhalation, remove 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 method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Most important symptoms and effects, both acute and delayed

Symptoms Not available.

Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

5. FIRE-FIGHTING MEASURES

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

Small Fire Dry chemical, CO₂, or water spray.

Large Fire Dry chemical or CO₂, alcohol - resistant foam or water spray.

Unsuitable extinguishing media Any not listed above.

Specific hazards arising from the chemical

Hazardous combustion products Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive fumes.

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 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**
Prevent entry into waterways, sewers, basements or confined areas. See Section 12 for additional ecological information.

**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 un-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.

**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**
Reacts violently with strong reducing agents, metals, sulfur trioxide, strong oxidizers and water. Contact with metals may product toxic sulfur dioxide fumes and may release flammable hydrogen gas.
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure Guidelines
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>TWA: 0.2 mg/m³ thoracic fraction</td>
<td>TWA: 1 mg/m³</td>
<td>IDLH: 15 mg/m³ TWA: 1 mg/m³</td>
</tr>
</tbody>
</table>

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
In laboratory, medical or industrial settings, safety glasses with side shields are recommended. The use of goggles or full face protection may be required depending on the industrial exposure setting. Contact a health and safety professional for specific information.

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
None required under normal conditions of use. Follow the OSHA respirator regulations found in 29 CFR1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

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

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear liquid.</td>
</tr>
<tr>
<td>Color</td>
<td>Clear</td>
</tr>
<tr>
<td>Odor</td>
<td>Pungent</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No Data</td>
</tr>
<tr>
<td>pH</td>
<td>No Data</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No Data</td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>95 °C - 95.5556 °C</td>
</tr>
<tr>
<td>Flash point</td>
<td>No Data</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>1 n-butyl, Acetate=1</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No Data</td>
</tr>
<tr>
<td>Flammability Limit in Air</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No Data</td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No Data</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>10 mmHg</td>
</tr>
<tr>
<td>Vapor density</td>
<td>1</td>
</tr>
</tbody>
</table>
Specific Gravity 1.215-1.35
Water solubility 100%
Solubility in other solvents No Data
Partition coefficient No Data
Autoignition temperature No Data
Decomposition temperature No Data
Kinematic viscosity No Data
Dynamic viscosity No Data
Explosive properties No Data
Oxidizing properties No Data

Other Information
Softening point No Data
Molecular weight No Data
VOC Content (%) Not available.
Density 10.1392-11.2658 lbs/gal
Bulk density No Data

10. STABILITY AND REACTIVITY

Reactivity
Not reactive.

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
Reacts violently with strong reducing agents, metals, sulfur trioxide, strong oxidizers and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Hazardous Decomposition Products
Sulfur trioxide, carbon monoxide, sulfuric acid fumes, and sulfur dioxide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Product Information

Inhalation
(Acute): May cause corrosive burns – irreversible damage.
(Chronic): Repeated or prolonged exposure to corrosive fumes may cause bronchial irritation with chronic cough.

Eye contact
(Acute): Causes serious eye damage.
(Chronic): Repeated or prolonged exposure to corrosive materials or fumes may cause conjunctivitis.

Skin Contact
(Acute): Causes severe skin burns and eye damage.
(Chronic): Repeated or prolonged exposure to corrosive materials will cause dermatitis.

Ingestion
(Acute): May cause irreversible damage to mucous membranes.
(Chronic): Repeated or prolonged exposure to corrosive materials or fumes may cause gastrointestinal disturbances.
Acute Effects

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>7664-93-9</td>
<td>= 2140 mg/kg (Rat)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>= 510 mg/m³ (Rat) 2 h</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Not available.
Serious eye damage/eye irritation Effective dose; 5mg Rabbit, 30 second rinse. Severe eye irritation.
Irritation Severe burns.
Corrosivity Not available.
Sensitization Not available.
Germ cell mutagenicity Not available.
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.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>A2</td>
<td>Group 1</td>
<td>–</td>
<td>X</td>
</tr>
<tr>
<td>7664-93-9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Reproductive toxicity Not available.
Developmental Toxicity Not available.
Teratogenicity Not available.
STOT - single exposure Not classified.
STOT - repeated exposure Not classified.
Chronic toxicity Not available.
Subchronic toxicity Not available.
Target Organ Effects Not available.
Aspiration hazard Not available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity 65% of the mixture consists of ingredient(s) of unknown toxicity

12. ECOLOGICAL INFORMATION

Ecotoxicity

65% of the mixture consists of components(s) of unknown hazards to the aquatic environment

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>7664-93-9</td>
<td>500: 96 h Brachydanio rerio mg/L LC50 static</td>
<td>29: 24 h Daphnia magna mg/L EC50</td>
<td></td>
</tr>
</tbody>
</table>

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.

**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 one or more substances that are listed with the State of California as a hazardous waste.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>California Hazardous Waste Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>Toxic</td>
</tr>
<tr>
<td>7664-93-9</td>
<td>Corrosive</td>
</tr>
</tbody>
</table>

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
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

International Inventories
TSCA Complies
DSL/NDSL Complies
EINECS/ELINCS Complies
ENCS Complies
IECSC Complies
KECL Complies
PICCS Complies
AICS Complies

Legend:
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

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
### 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)

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid 7664-93-9</td>
<td>1000 lb</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

### CERCLA

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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA/SARA RQ</th>
<th>Reportable Quantity (RQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid 7664-93-9</td>
<td>1000 lb</td>
<td>1000 lb</td>
<td>RQ 1000 lb final RQ, RQ 454 kg final RQ</td>
</tr>
</tbody>
</table>

### US 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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid 7664-93-9</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

### U.S. EPA Label Information

**EPA Pesticide Registration Number**: Not available.

### 16. OTHER INFORMATION

- **Prepared By**: IES Engineers
- **Issue Date**: 13-Feb-2014
- **Revision Date**: 1-Dec-2014
- **Revision Note**: Not available.

**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