SECTION 1: Identification

1.1. Identification

Product form : Mixtures
Product name : Sulfuric Acid, 50% v/v
Product code : LC25640

1.2. Recommended use and restrictions on use

Use of the substance/mixture : For laboratory and manufacturing use only.
Recommended use : Laboratory chemicals
Restrictions on use : Not for food, drug or household use

1.3. Supplier

LabChem, Inc.
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
Zelienople, PA 16063 - USA
T 412-826-5230 - F 724-473-0647

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or +1-703-741-5970

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Skin corrosion/irritation
Category 1B H314 Causes severe skin burns and eye damage
Serious eye damage/eye irritation Category 1 H318 Causes serious eye damage

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling
Hazard pictograms (GHS US) :

Signal word (GHS US) : Danger
Hazard statements (GHS US) : H314 - Causes severe skin burns and eye damage
Precautionary statements (GHS US) :
P260 - Do not breathe mist, spray, vapors.
P264 - Wash exposed skin thoroughly after handling.
P280 - Wear eye protection, face protection, protective clothing, protective gloves.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P333 - IF ON SKIN (or hair): Remove/Take off immediately 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
P310 - Immediately call a poison center or doctor/physician.
P363 - Wash contaminated clothing before reuse.
P405 - Store locked up.
P501 - Dispose of contents/container to comply with local, state and federal regulations
If inhaled: Remove person to fresh air and keep comfortable for breathing

2.3. Other hazards which do not result in classification

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

Not applicable
SECTION 3: Composition/Information on ingredients

3.1. Substances
Not applicable

3.2. Mixtures

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfuric Acid</td>
<td>(CAS-No.) 7664-93-9</td>
<td>59.23</td>
<td>Skin Corr. 1A, H314</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Dam. 1, H318</td>
</tr>
<tr>
<td>Water</td>
<td>(CAS-No.) 7732-18-5</td>
<td>40.77</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

Full text of hazard classes and H-statements: see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general: Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact: Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a poison center or doctor/physician.

First-aid measures after eye contact: 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/physician.

First-aid measures after ingestion: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor/physician.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects: Causes severe skin burns and eye damage.
Symptoms/effects after inhalation: Coughing. Irritation of the respiratory tract.
Symptoms/effects after skin contact: Corrosion of the skin.
Symptoms/effects after eye contact: Corrosion of the eye tissue.
Symptoms/effects after ingestion: Bleeding of the gastrointestinal tract.
Symptoms/effects upon intravenous administration: Not applicable.

Chronic symptoms: Respiratory difficulties. Inflammation/damage of the eye tissue. Irritation of the respiratory tract. Skin rash/inflammation.

4.3. Immediate medical attention and special treatment, if necessary

Obtain medical assistance.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media


Unsuitable extinguishing media: Do not use a heavy water stream.

5.2. Specific hazards arising from the chemical

Fire hazard: Reacts exothermically with water (moisture).
Explosion hazard: Not applicable.
Reactivity: Violent exothermic reaction with (some) bases.

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions: Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Prevent fire-fighting water from entering environment.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Other information: Not applicable.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Evacuate area.

6.1.1. For non-emergency personnel

Emergency procedures: Evacuate unnecessary personnel.
6.1.2. For emergency responders

Protective equipment
Equip cleanup crew with proper protection.

Emergency procedures
Ventilate area.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment
Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up
Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling
Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapor. Do not breathe mist, vapors, spray. Avoid contact during pregnancy/while nursing.

Hygiene measures
Wash exposed skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures
Comply with applicable regulations.

Storage conditions
Keep only in the original container in a cool, well ventilated place away from incompatible materials. Keep container closed when not in use.

Incompatible products
Strong bases. combustible materials. metals.

Incompatible materials
Sources of ignition. Direct sunlight.

Prohibitions on mixed storage
KEEP SUBSTANCE AWAY FROM: (strong) bases. combustible materials. metals. metal powders.

Storage area
Keep container in a well-ventilated place. Keep only in the original container.

Packaging materials
MATERIAL TO AVOID: aluminium, bronze, copper, iron, lead, monel steel, nickel, steel, tin, zinc.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
<th>ACGIH</th>
<th>ACGIH TWA (mg/m³)</th>
<th>0.2 mg/m³ (Thoracic fraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
<td>1 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

Water (7732-18-5)
Not applicable

8.2. Appropriate engineering controls

Appropriate engineering controls
Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Hand protection:
Wear protective gloves.
Sulfuric Acid, 50% v/v
Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

**Eye protection:**
Chemical goggles or face shield

**Skin and body protection:**
Wear suitable protective clothing

**Respiratory protection:**
Mist formation: aerosol mask

**Thermal hazard protection:**
None necessary.

**Other information:**
Do not eat, drink or smoke during use.

**SECTION 9: Physical and chemical properties**

### 9.1. Information on basic physical and chemical properties

- **Physical state:** Liquid
- **Appearance:** Clear, colorless liquid.
  - Colorless
  - odorless
- **Odor threshold:** No data available
- **pH:** \( \leq 1 \)
- **Melting point:** No data available
- **Freezing point:** No data available
- **Boiling point:** No data available
- **Flash point:** No data available
- **Relative evaporation rate (butyl acetate=1):** No data available
- **Flammability (solid, gas):** Not flammable
  - Non flammable.
- **Vapor pressure:** No data available
- **Relative vapor density at 20 °C:** No data available
- **Relative density:** No data available
- **Specific gravity / density:** 1.49 g/ml
- **Molecular mass:** 98.08 g/mol
- **Solubility:** Exothermically soluble in water.
- **Log Pow:** No data available
- **Auto-ignition temperature:** No data available
- **Decomposition temperature:** No data available
- **Viscosity, kinematic:** 3.9 cSt
- **Viscosity, dynamic:** No data available
- **Explosion limits:** No data available
- **Explosive properties:** Not applicable.
- **Oxidizing properties:** None.

### 9.2. Other information

No additional information available

**SECTION 10: Stability and reactivity**

### 10.1. Reactivity

Violent exothermic reaction with (some) bases.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

Reacts violently with (some) bases: release of heat.
10.4. Conditions to avoid
Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials
metals. Strong bases. combustible materials.

10.6. Hazardous decomposition products
Sulfur compounds. Thermal decomposition generates: Corrosive vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure : Skin and eye contact
Acute toxicity : Not classified

**Sulfuric Acid (7664-93-9)**

<table>
<thead>
<tr>
<th></th>
<th>LD50 oral rat</th>
<th>ATE US (oral)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>2140 mg/kg body weight (Rat, Experimental value, Oral)</td>
<td>2140 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>90000 mg/kg body weight</td>
<td></td>
</tr>
</tbody>
</table>

**Water (7732-18-5)**

<table>
<thead>
<tr>
<th></th>
<th>LD50 oral rat</th>
<th>ATE US (oral)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>≥ 90000 mg/kg</td>
<td>90000 mg/kg body weight</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Causes severe skin burns and eye damage.
pH: ≤ 1

Serious eye damage/irritation : Causes serious eye damage.
pH: ≤ 1

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Based on available data, the classification criteria are not met

Carcinogenicity : Not classified

**Sulfuric Acid (7664-93-9)**

Additional information : Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans

National Toxicology Program (NTP) Status : 2 - Known Human Carcinogens

Reproductive toxicity : Not classified

Based on available data, the classification criteria are not met

Specific target organ toxicity – single exposure : Not classified

Specific target organ toxicity – repeated exposure : Not classified

Aspiration hazard : Not classified

Potential Adverse human health effects and symptoms : Based on available data, the classification criteria are not met.

Symptoms/effects after inhalation : Coughing. Irritation of the respiratory tract.

Symptoms/effects after skin contact : Caustic burns/corrosion of the skin.

Symptoms/effects after eye contact : Corrosion of the eye tissue.

Symptoms/effects after ingestion : Bleeding of the gastrointestinal tract.

Symptoms/effects upon intravenous administration : Not available.

Chronic symptoms : Respiratory difficulties. Inflammation/damage of the eye tissue. Irritation of the respiratory tract. Skin rash/inflammation.

SECTION 12: Ecological information

12.1. Toxicity

**Sulfuric Acid (7664-93-9)**

<table>
<thead>
<tr>
<th></th>
<th>LC50 fish 1</th>
<th>EC50 Daphnia 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>42 mg/l (96 h, Gambusia affinis)</td>
<td>29 mg/l (24 h, Daphnia magna)</td>
</tr>
</tbody>
</table>
Sulfuric Acid, 50% v/v
Safety Data Sheet

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Sulfuric Acid, 50% v/v</th>
<th>Persistence and degradability</th>
<th>Not established.</th>
</tr>
</thead>
</table>

**Sulfuric Acid (7664-93-9)**

<table>
<thead>
<tr>
<th>Persistence and degradability</th>
<th>Biodegradability: not applicable.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biochemical oxygen demand (BOD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Chemical oxygen demand (COD)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>ThOD</td>
<td>Not applicable</td>
</tr>
<tr>
<td>BOD (% of ThOD)</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

**Water (7732-18-5)**

<table>
<thead>
<tr>
<th>Persistence and degradability</th>
<th>Not established.</th>
</tr>
</thead>
</table>

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Sulfuric Acid, 50% v/v</th>
<th>Bioaccumulative potential</th>
<th>Not established.</th>
</tr>
</thead>
</table>

**Sulfuric Acid (7664-93-9)**

- Log Pow: -2.2 (Estimated value)
- Bioaccumulative potential: Not applicable

**Water (7732-18-5)**

<table>
<thead>
<tr>
<th>Bioaccumulative potential</th>
<th>Not established.</th>
</tr>
</thead>
</table>

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Other information: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.

Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description: UN1830 Sulfuric acid (with more than 51 percent acid), 8, II

UN-No. (DOT): UN1830

Proper Shipping Name (DOT): Sulfuric acid with more than 51 percent acid

Transport hazard class(es) (DOT): 8 - Class 8 - Corrosive material 49 CFR 173.136

Packing group (DOT): II - Medium Danger

Hazard labels (DOT): 8 - Corrosive

DOT Packaging Non Bulk (49 CFR 173.xxx): 202

DOT Packaging Bulk (49 CFR 173.xxx): 242
Sulfuric Acid, 50% v/v
Safety Data Sheet

DOT Special Provisions (49 CFR 172.102) :
A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packaging.
A7 - Steel packaging must be corrosion-resistant or have protection against corrosion.
B3 - MC 300, MC 301, MC 302, MC 303, and MC 306 and DOT 406 cargo tanks and DOT 57 portable tanks are not authorized.
B83 - Bottom outlets are prohibited on tank car tanks transporting sulfuric acid in concentrations over 65.25 percent.
B84 - Packaging must be protected with non-metallic linings impervious to the lading or have a suitable corrosion allowance for sulfuric acid or spent sulfuric acid in concentration up to 65.25 percent.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.
T8 - 4 178.274(d)(2) Normal............. Prohibited
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubic expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
TP12 - This material is considered highly corrosive to steel.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L
DOT Vessel Stowage Location : C - The material must be stowed “on deck only” on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other : 14 - For metal drums, stowage permitted under deck on cargo vessels
Other information : No supplementary information available.

Transport by sea

Transport document description (IMDG) : UN 1830 SULPHURIC ACID, 8, II
UN-No. (IMDG) : 1830
Proper Shipping Name (IMDG) : SULPHURIC ACID
Class (IMDG) : 8 - Corrosive substances
Packing group (IMDG) : II - substances presenting medium danger

Air transport

Transport document description (IATA) : UN 1830 Sulphuric acid, 8, II
UN-No. (IATA) : 1830
Proper Shipping Name (IATA) : Sulphuric acid
Class (IATA) : 8 - Corrosives
Packing group (IATA) : II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Sulfuric Acid, 50% v/v
Listed on the United States TSCA (Toxic Substances Control Act) inventory
SARA Section 311/312 Hazard Classes Health hazard - Serious eye damage or eye irritation
Health hazard - Skin corrosion or Irritation

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.

Sulfuric Acid CAS-No. 7664-93-9 59.23%
Sulfuric Acid, 50% v/v
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RQ (Reportable quantity, section 304 of EPA's List of Lists)</td>
<td>1000 lb</td>
</tr>
<tr>
<td>SARA Section 302 Threshold Planning Quantity (TPQ)</td>
<td>1000 lb</td>
</tr>
<tr>
<td>SARA Section 311/312 Hazard Classes</td>
<td>Health hazard - Skin corrosion or Irritation Health hazard - Serious eye damage or eye irritation</td>
</tr>
</tbody>
</table>

15.2. International regulations

CANADA

Sulfuric Acid, 50% v/v
Listed on the Canadian DSL (Domestic Substances List)

Water (7732-18-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations
No additional information available

National regulations

Sulfuric Acid, 50% v/v
Listed on the Canadian IDL (Ingredient Disclosure List)

Sulfuric Acid (7664-93-9)
Listed on IARC (International Agency for Research on Cancer)
Listed as carcinogen on NTP (National Toxicology Program)

15.3. US State regulations
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Revision date : 03/20/2019
Other information : None.

Full text of H-phrases: see section 16:

<table>
<thead>
<tr>
<th>H314</th>
<th>Causes severe skin burns and eye damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>H318</td>
<td>Causes serious eye damage</td>
</tr>
</tbody>
</table>

NFPA health hazard : 4 - Materials that, under emergency conditions, can be lethal.

NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

NFPA reactivity : 1 - Materials that in themselves are normally stable but can become unstable at elevated temperatures and pressures.

NFPA specific hazard : W - Materials that react violently or explosively with water.

Hazard Rating
Health : 4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures

Flammability : 0 Minimal Hazard - Materials that will not burn

Physical : 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Personal protection : H
H - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US LabChem

03/20/2019 EN (English US) 8/9
Sulfuric Acid, 50% v/v
Safety Data Sheet

Information in this SDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc assumes no liability resulting from the use of this SDS. The user must determine suitability of this information for his application.