SECTION 1: Identification

1.1. Identification
Product form: Mixture
Product name: Sulfuric Acid, 50% v/v
Product code: LC25640

1.2. Relevant identified uses of the substance or mixture and uses advised against
Use of the substance/mixture: For laboratory and manufacturing use only

1.3. Details of the supplier of the safety data sheet
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
info@labchem.com - www.labchem.com

1.4. Emergency telephone number
Emergency number: CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture
GHS-US classification
Skin corrosion/irritation Category 1B H314
Serious eye damage/eye irritation Category 1 H318
Full text of H statements: see section 16

2.2. Label elements
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 + P353 - 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
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. Substance
Not applicable
Sulfuric Acid, 50% v/v
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

3.2. Mixture

<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, both acute and delayed

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

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

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

SECTION 5: Firefighting measures

5.1. Extinguishing media

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

5.2. Special hazards arising from the substance or mixture

Fire hazard : Reacts exothermically with water (moisture).
Explosion hazard : Not applicable.
Reactivity : Thermal decomposition generates : Corrosive vapors.

5.3. Advice for firefighters

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

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>ACBIGH</th>
<th>ACGIH TWA (mg/m³)</th>
<th>OSHA PEL (TWA) (mg/m³)</th>
<th>IDLH US IDLH (mg/m³)</th>
<th>NIOSH REL (TWA) (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.2 mg/m³ (Sulfuric acid; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value; Thoracic fraction)</td>
<td>1 mg/m³</td>
<td>15 mg/m³</td>
</tr>
</tbody>
</table>

Water (7732-18-5)

Not applicable

8.2. Exposure controls

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


Hand protection: Wear protective gloves.
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**

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

**SECTION 10: Stability and reactivity**

**10.1. Reactivity**
Thermal decomposition generates: Corrosive vapors.

**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)

**LD50 oral rat**
2140 mg/kg body weight (Rat; Experimental value)

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

**LD50 oral rat**
≥ 90000 mg/kg

**ATE US (oral)**
90000.000 mg/kg body weight

**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

**Additional information**

Strong inorganic acid mists containing sulfuric acid are carcinogenic to humans

**IARC group**
1 - 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

Based on available data, the classification criteria are not met.

**Symptoms/injuries after inhalation**
Coughing. Irritation of the respiratory tract.

**Symptoms/injuries after skin contact**
Caustic burns/corrosion of the skin.

**Symptoms/injuries after eye contact**
Corrosion of the eye tissue.

**Symptoms/injuries after ingestion**
Bleeding of the gastrointestinal tract.

**Symptoms/injuries upon intravenous administration**
Not available.

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

### SECTION 12: Ecological information

#### 12.1. Toxicity

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

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish</td>
<td>42 mg/l (LC50; 96 h)</td>
</tr>
<tr>
<td>EC50 Daphnia</td>
<td>29 mg/l (EC50; 24 h)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Endpoint</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistence and degradability</td>
<td>Not established.</td>
</tr>
</tbody>
</table>

#### 12.2. Persistence and degradability

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

Persistence and degradability: not applicable.

Biodegradability:
Not applicable

Chemical oxygen demand (COD)
Not applicable

ThOD
Not applicable

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

Persistence and degradability: Not established.
Sulfuric Acid, 50% v/v
Safety Data Sheet

12.3. Bioaccumulative potential

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

<table>
<thead>
<tr>
<th>Sulfuric Acid (7664-93-9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
</tr>
<tr>
<td>Bioaccumulative potential</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Water (7732-18-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioaccumulative potential</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

Effect on the global warming: No known effects from this product.

GWPtrak comment: No known effects from this product.

Other information: Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment 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
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, 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.

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 cubical expansion of the liquid between the mean temperature of the liquid during filling (f) 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.

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
Immediate (acute) health hazard

Sulfuric Acid (7664-93-9)

RQ (Reportable quantity, section 304 of EPA’s List of Lists) : 1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ) : 1000 lb
SARA Section 311/312 Hazard Classes : Immediate (acute) health hazard

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, ACS
CAS No 7664-93-9
59.23%

15.2. International regulations

CANADA

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

WHMIS Classification : Class E - Corrosive Material
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>WHMIS Classification</th>
<th>Class E - Corrosive Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water (7732-18-5)</td>
<td>WHMIS Classification</td>
<td>Uncontrolled product according to WHMIS classification criteria</td>
</tr>
</tbody>
</table>

**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**

<table>
<thead>
<tr>
<th>Revision date</th>
<th>Other information</th>
</tr>
</thead>
<tbody>
<tr>
<td>09/07/2016</td>
<td>None.</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16:

- **H314**: Causes severe skin burns and eye damage
- **H318**: Causes serious eye damage

- **NFPA health hazard**: 4 - Very short exposure could cause death or serious residual injury even though prompt medical attention was given.
- **NFPA fire hazard**: 0 - Materials that will not burn.
- **NFPA reactivity**: 1 - Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.
- **NFPA specific hazard**: W - Unusual reactivity with water. This indicates a potential hazard using water to fight a fire involving this material. When a compound is both water-reactive and an oxidizer, the W/bar symbol should go in this quadrant and the OX warning is placed immediately below the NFPA diamond.

- **HMIS III 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 - Splash goggles, Gloves, Synthetic apron, Vapor respirator

SDS US LabChem

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