1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Tetramethylammonium hydroxide solution 25%
Product Number: 331635
Brand: Sigma-Aldrich
Supplier: Sigma-Aldrich

Supplier Address:
3050 Spruce Street
SAINT LOUIS MO  63103
USA

Telephone: +1 800-325-5832
Fax: +1 800-325-5052
Emergency Phone #: (314) 776-6555

Preparation Information:
Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Highly toxic by skin absorption, Highly toxic by ingestion, Corrosive

Other hazards which do not result in classification
Rapidly absorbed through skin.

GHS Classification
Acute toxicity, Oral (Category 2)
Acute toxicity, Dermal (Category 2)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Acute aquatic toxicity (Category 2)

GHS Label elements, including precautionary statements

Pictogram

Signal word: Danger

Hazard statement(s)
H300 + H310 Fatal if swallowed or in contact with skin
H314 Causes severe skin burns and eye damage.
H401 Toxic to aquatic life.

Precautionary statement(s)
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.
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.

HMIS Classification
Health hazard: 3
Flammability: 1
Physical hazards: 0

NFPA Rating
Health hazard: 3
Fire: 1
Reactivity Hazard: 0

Potential Health Effects

Inhalation  May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Skin  May be fatal if absorbed through skin. Causes skin burns.

Eyes  Causes eye burns. Causes severe eye burns.

Ingestion  May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetramethylammonium hydroxide</td>
<td>Acute Tox. 3; Acute Tox. 2; Skin Corr. 1B; H300, H311, H314</td>
<td>30 - 60 %</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>75-59-2</td>
<td></td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-882-9</td>
<td></td>
</tr>
</tbody>
</table>

For the full text of the H-Statements and R-Phrases mentioned in this Section, see Section 16

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods and materials for containment and cleaning up
Soak up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose 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).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Tightly fitting safety goggles. Faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form liquid
Colour no data available

Safety data
pH > 13 at 20 °C (68 °F)
Melting point/freezing point no data available
Boiling point no data available
Flash point > 100 °C (> 212 °F)
Ignition temperature no data available
Autoignition temperature no data available
Lower explosion limit no data available
Upper explosion limit no data available
Vapour pressure 23.33 hPa (17.50 mmHg) at 20 °C (68 °F)
Density: no data available
Water solubility: no data available
Partition coefficient: n-octanol/water: no data available
Relative vapour density: no data available
Odour: no data available
Odour Threshold: no data available
Evaporation rate: no data available

10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
no data available

**Conditions to avoid**
no data available

**Materials to avoid**
Aluminium, Alkali metals, Strong oxidizing agents, Acids, Acid chlorides, Acid anhydrides, Halogens

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Oral LD50**
no data available

**Inhalation LC50**
no data available

**Dermal LD50**
LD50 Dermal - rat - 449 mg/kg
LD50 Dermal - rat - 112 mg/kg
no data available

**Other information on acute toxicity**
no data available

**Skin corrosion/irritation**
no data available

**Serious eye damage/eye irritation**
Eyes: no data available

**Respiratory or skin sensitization**
no data available

**Germ cell mutagenicity**
no data available

**Carcinogenicity**
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as
probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity  
no data available

Teratogenicity  
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)  
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)  
no data available

Aspiration hazard  
no data available

Potential health effects  

Inhalation  
May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion  
May be fatal if swallowed.

Skin  
May be fatal if absorbed through skin. Causes skin burns.

Eyes  
Causes eye burns. Causes severe eye burns.

Signs and Symptoms of Exposure  
Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. Inhalation of vapors may cause: pulmonary edema, spasm, inflammation and edema of the bronchi, spasm, inflammation and edema of the larynx. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects  
no data available

Additional Information  
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity  
no data available

Toxicity to daphnia and other aquatic invertebrates  
EC50 - Daphnia magna (Water flea) - 3.0 mg/l - 48 h

Persistence and degradability  
no data available

Bioaccumulative potential  
no data available
Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 1835   Class: 8   Packing group: II
Proper shipping name: Tetramethylammonium hydroxide solution
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 1835   Class: 8   Packing group: II   EMS-No: F-A, S-B
Proper shipping name: TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION
Marine pollutant: No

IATA
UN number: 1835   Class: 8   Packing group: II
Proper shipping name: Tetramethylammonium hydroxide, solution

15. REGULATORY INFORMATION

OSHA Hazards
Highly toxic by skin absorption, Highly toxic by ingestion, Corrosive

SARA 302 Components
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td></td>
</tr>
<tr>
<td>Tetramethylammonium hydroxide</td>
<td>75-59-2</td>
<td>2007-03-01</td>
</tr>
<tr>
<td>Chloride</td>
<td>-</td>
<td></td>
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</tbody>
</table>

New Jersey Right To Know Components

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<td>-</td>
<td></td>
</tr>
</tbody>
</table>
California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Text of H-code(s) and R-phrase(s) mentioned in Section 3

<table>
<thead>
<tr>
<th>Acute Tox.</th>
<th>Acute toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>H300</td>
<td>Fatal if swallowed.</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin.</td>
</tr>
<tr>
<td>H314</td>
<td>Causes severe skin burns and eye damage.</td>
</tr>
<tr>
<td>Skin Corr.</td>
<td>Skin corrosion</td>
</tr>
</tbody>
</table>

Further Information
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