1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Tetramethylammonium Hydroxide, 25% (Aqueous solution)

Product code: 322

UN-No: 1835

Recommended Use: For use in industrial installations only, Catalyst, stripping solution, laboratory chemicals

Contact Manufacturer:
- SACHEM Americas
  2311 Pipeline Road
  Cleburne, Texas 76031
  Tel: 817-202-3200
  Fax: 817-641-5637
- SACHEM Europe BV
  Van Voordenpark 15
  5301 KP Zaltbommel
  The Netherlands
  Telephone: 0031-4186-82000
  E-mail: msds@sachemeurope.nl
- SACHEM Asia Co., Ltd.
  5-6-27 Mizuhai
  Higashi Osaka 578-0921 Japan
  TEL 81-729-64-4300
  FAX 81-729-64-4301
- SACHEM
  No.116 Meiyu Road
  Wuxi National Hi-Tech Industrial Development Zone
  P.R.China 214028
  Phone: 0086-510-88556461

Supplier:
- SACHEM Americas
  2311 Pipeline Road
  Cleburne, Texas 76031
  Tel: 817-202-3200
  Fax: 817-641-5637
- SACHEM Europe BV
  Van Voordenpark 15
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  The Netherlands
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  FAX 81-729-64-4301
- SACHEM
  No.116 Meiyu Road
  Wuxi National Hi-Tech Industrial Development Zone
  P.R.China 214028
  Phone: 0086-510-88556461

Emergency Telephone Number:
- 512-421-4900 from 8 a.m. - 5 p.m. Central or 817-202-3200
- Chemtrec 1-800-424-9300
- 0031-6537-70227
- Higashi Osaka Japan
  TEL 81-729-64-4300
- SACHEM Wuxi China 0086-523-83889090
# 2. HAZARDS IDENTIFICATION

## DANGER!

<table>
<thead>
<tr>
<th>Emergency Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong bases</td>
</tr>
<tr>
<td>Causes severe caustic burns to skin and eyes</td>
</tr>
<tr>
<td>May be fatal if inhaled, absorbed through skin, or swallowed</td>
</tr>
<tr>
<td>Avoid contact with skin, eyes and clothing</td>
</tr>
<tr>
<td>Avoid release to the environment</td>
</tr>
</tbody>
</table>

### Appearance
- Colorless, Light yellow.

### Physical State
- Liquid.

### Odor
- Slight, Amines

### OSHA Regulatory Status
- This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### Potential Health Effects

#### Principle Routes of Exposure
- Skin contact, Eye contact, Inhalation.

#### Acute Effects

<table>
<thead>
<tr>
<th>Site</th>
<th>Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eyes</td>
<td>Corrosive. Causes severe caustic burns to skin and eyes. Large exposures may be fatal.</td>
</tr>
<tr>
<td>Skin</td>
<td>Corrosive. Causes burns. May be fatal if absorbed through skin.</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Corrosive. Causes burns. Avoid breathing vapors or mists. May be fatal if inhaled.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Corrosive. Can burn mouth, throat, and stomach. May be fatal if swallowed.</td>
</tr>
</tbody>
</table>

#### Chronic Effects

| Toxicity                      | Repeated contact may cause allergic reactions in very susceptible persons |

See Section 11 for additional Toxicological information.

### Main Symptoms
- Liquid, aerosols and vapors of this product are irritating and can cause pain, tearing, reddening and swelling accompanied by a stinging sensation and/or a feeling like that of fine dust in the eyes. Breathing difficulties. If coughing, difficult breathing or other symptoms of poisoning occur, even after several hours, call a physician immediately. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting. May cause irregular heartbeats, especially under conditions of stress. blurred vision.

### Aggravated Medical Conditions
- No information available

### Interactions with Other Chemicals
- No information available.

### Potential Environmental Effects
- Harmful to aquatic organisms.
3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Family
Quaternary ammonium compound

Formula
C4H12N.HO

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>75</td>
</tr>
<tr>
<td>Tetramethylammonium Hydroxide</td>
<td>75-59-2</td>
<td>25</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General Advice
Do not get in eyes, on skin, or on clothing
Take off contaminated clothing and shoes immediately
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
Show this safety data sheet to the doctor in attendance

Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. IF ON SKIN (or hair):
Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
Remove and wash contaminated clothing before re-use. Call a physician immediately.

Inhalation
Immediate medical attention is required. Move to fresh air. If breathing is difficult, give oxygen.
If not breathing, give artificial respiration. Consult a physician.

Ingestion
Immediate medical attention is required. Do not induce vomiting. Never give anything by mouth to an unconscious person. Drink 1 or 2 glasses of water. Call a physician immediately.

Notes to Physician
Treat symptomatically

Protection of First-aiders
Avoid contact with skin, eyes and clothing.
5. FIRE-FIGHTING MEASURES

Flammable Properties
The product is not flammable. Heating can release vapors which can be ignited.

Suitable Extinguishing Media
Use: Water spray, Carbon dioxide (CO2), Foam, Dry chemical

Hazardous Combustion Products
Nitrogen oxides (NOx), Carbon monoxide.

Explosion Data
Specific Hazards Arising from the Chemical
The product causes burns of eyes, skin and mucous membranes. May be fatal if inhaled, absorbed through skin, or swallowed. Hazardous combustion products. Nitrogen oxides (NOx). Carbon monoxide.

Protective Equipment and Precautions for Firefighters
In the event of fire and/or explosion do not breathe fumes. In the event of fire, wear self contained breathing apparatus. Use personal protective equipment. Avoid contact with skin, eyes and clothing.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions
Do not get in eyes, on skin, or on clothing. Do not breathe vapors or spray mist. Use personal protective equipment. Do not ingest.

Environmental Precautions
Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. Do not flush into surface water or sanitary sewer system. Local authorities should be advised if significant spillages cannot be contained.

Methods for containment
Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

Methods for Clean-up
Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Prevent product from entering drains. Keep in suitable and closed containers for disposal.
7. HANDLING AND STORAGE

Handling
Do not get in eyes, on skin, or on clothing
Do not breathe vapours or spray mist
In case of insufficient ventilation, wear suitable respiratory equipment
Do not ingest
Wear personal protective equipment
Remove and wash contaminated clothing before re-use
Do not eat, drink or smoke when using this product
Ensure that eyewash stations and safety showers are close to the workstation location

Storage
Keep container tightly closed
Keep away from heat
To avoid thermal decomposition, do not overheat
Store in accordance with local regulations
Stainless steel
Polyethylene containers

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Controls
Avoid formation of aerosol
Ensure adequate ventilation, especially in confined areas
Exhaust ventilation equipped with scrubbers
Skin and body protection

Personal Protective Equipment

Eye/face Protection
Do not get in eyes, on skin, or on clothing. Causes severe skin burns and eye damage. Face-shield. Tightly fitting safety goggles.

Skin Protection

Respiratory Protection
In case of insufficient ventilation wear suitable respiratory equipment. In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

Other protective equipment
Ensure that eyewash stations and safety showers are close to the workstation location.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use. Wash hands before breaks and immediately after handling the product.
9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless. Light yellow.</td>
</tr>
<tr>
<td>Odor</td>
<td>Slight Amines</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>Physical State</td>
<td>Liquid</td>
</tr>
<tr>
<td>pH</td>
<td>&gt;13</td>
</tr>
<tr>
<td>Flash Point</td>
<td>&gt;95 C</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>-25 C</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>Ca. 102 C</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability Limits in Air</td>
<td>Upper No data available Lower No data available</td>
</tr>
<tr>
<td>Explosive Properties</td>
<td>According to experience not expected</td>
</tr>
<tr>
<td>Oxidizing Properties</td>
<td>According to experience not expected</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>16.0 mm Hg @ 25 C</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>No information available</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.014 @ 20 C</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Miscible with water</td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water)</td>
<td>No information available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>3.13 centipoise @ 19 C</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>91.15</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Stability</td>
<td>Stable under normal conditions. Hazardous polymerisation does not occur.</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>To avoid thermal decomposition, do not overheat. Heating can release hazardous gases. Temperatures above 100°C.</td>
</tr>
<tr>
<td>Incompatible Materials</td>
<td>Strong acids. Strong oxidizing agents. PVDF.</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Trimethylamine and Methanol.</td>
</tr>
<tr>
<td>Hazardous Reactions</td>
<td>None under normal processing</td>
</tr>
</tbody>
</table>

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity</td>
<td>Causes burns</td>
</tr>
<tr>
<td>Product Information</td>
<td>May be fatal if absorbed through skin</td>
</tr>
<tr>
<td></td>
<td>May be fatal if swallowed and enters airways</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component Information</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
### Chronic Toxicity

**Carcinogenicity**

Contains no ingredient listed as a carcinogen.

**Legend:**

RTECS: (Registry of Toxic Effects of Chemical Substances)  
ACGIH: (American Conference of Governmental Industrial Hygienists)  
IARC: (International Agency for Research on Cancer)  
NTP: (National Toxicity Program)  
OSHA: (Occupational Safety & Health Administration)

**Other Toxicity Information:**

Additional information may be found in RTECS.  
**RTECS No:** PA0875000

**Mutagenic Effects**

Not mutagenic in AMES Test.

---

### 12. ECOLOGICAL INFORMATION

**Ecotoxicity**

Acute aquatic toxicity testing has shown this compound to be highly toxic to the ceriodaphnia dubia (water flea).

**Ecotoxicity effects**

Harmful to aquatic organisms.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetramethylammonium Hydroxide</td>
<td></td>
<td></td>
<td></td>
<td>48-Hour LC50 = 55.6 mg/l</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(Daphnia magna)</td>
</tr>
</tbody>
</table>

**Persistence and degradability**

No information available

**Bioaccumulation**

No information available.

**Mobility**

No information available.
### 13. DISPOSAL CONSIDERATIONS

**Waste Disposal Methods**

Dispose of contents/container in accordance with local regulation. Can be disposed as waste water, when in compliance with local regulations. Neutralization is normally necessary before waste water is discharged into water treatment plants. Can be incinerated, when in compliance with local regulations.

**Contaminated packaging**

Empty remaining contents. Triple rinse containers.

**Waste from Residues / Unused Products**

Dispose of in accordance with local regulations. Neutralization is normally necessary before waste water is discharged into water treatment plants. Solutions with high pH-value must be neutralized before discharge. Can be incinerated, when in compliance with local regulations.

**US EPA Waste Number**

D002 Would be considered as a characteristic hazardous waste under RCRA if disposed in the form as shipped from SACHEM.
14. TRANSPORT INFORMATION

DOT
Proper shipping name Tetramethylammonium hydroxide solution
Hazard Class 8
Packing Group PGII

IATA
IATA Proper Shipping Name Tetramethylammonium hydroxide solution
Hazard Class 8
Packing Group PGII
Description UN1835, Tetramethylammonium hydroxide solution, 8, PGII

IMDG/IMO
IMDG/IMO Proper Shipping Name Tetramethylammonium hydroxide solution
Hazard Class 8
Packing Group PGII
Description UN1835, Tetramethylammonium hydroxide solution, 8, PGII
15. REGULATORY INFORMATION

USA

Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazardous Categorization

<table>
<thead>
<tr>
<th>Hazard Category</th>
<th>Yes/No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Health Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Acute Health Hazard</td>
<td>Yes</td>
</tr>
<tr>
<td>Fire Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Sudden Release of Pressure Hazard</td>
<td>No</td>
</tr>
<tr>
<td>Reactive Hazard</td>
<td>No</td>
</tr>
</tbody>
</table>

Clean Water Act

Not applicable

Listed on the New Jersey Right to Know Hazardous Substances List.

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetramethylammonium Hydroxide</td>
<td></td>
<td>Listed</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

International Regulations

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>ENCS</th>
<th>PICCS</th>
<th>DSL</th>
<th>TSCA</th>
<th>CHINA</th>
<th>AICS</th>
<th>KECL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>EC No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>231-791-2</td>
</tr>
<tr>
<td>Tetramethylammonium Hydroxide</td>
<td>2-186</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>200-882-9</td>
</tr>
</tbody>
</table>

TSCA

All components of this product are listed on the TSCA Chemical Inventory.
16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>Health Hazard</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Issuing Date 27-Aug-2008
Revision Date 27-Aug-2008

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. In case of any questions, please refer to the official document in English and contact us in your region.

End of Safety Data Sheet