MATERIAL SAFETY DATA SHEET (MSDS)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Mixture
Product code  : 06227

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Laboratory chemicals, Manufacture of substances

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

LOBA CHEMIE PVT.LTD.
107 Wode House Road, Jehangir Villa, Colaba
400005 Mumbai - INDIA
T +91 22 6663 6663 - F +91 22 6663 6699
info@lobachemie.com - www.lobachemie.com

1.4. Emergency telephone number

Emergency number  : + 91 22 6663 6663 (9:00am - 6:00 pm)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Directive 67/548/EEC or 1999/45/EC
T; R23/24/25
T; R39/23/24/25
Full text of R-phrases: see section 16

Adverse physicochemical, human health and environmental effects

No additional information available
TETRAMETHYL AMMONIUM HYDROXIDE SOLUTION 25% IN METHANOL
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2.2. Label elements
Labelling according to Directive 67/548/EEC or 1999/45/EC

Hazard symbols:

- T - Toxic

R-phrases:
- R23/24/25 - Toxic by inhalation, in contact with skin and if swallowed
- R39/23/24/25 - Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed

S-phrases:
- S4 - Keep away from living quarters
- S24 - Avoid contact with skin
- S28 - After contact with skin, wash immediately with plenty of ... (to be specified by the manufacturer)
- S35 - This material and its container must be disposed of in a safe way
- S36/37 - Wear suitable protective clothing and gloves
- S38 - In case of insufficient ventilation, wear suitable respiratory equipment
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible)
- S59 - Refer to manufacturer/supplier for information on recovery/recycling

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substance
Not applicable

3.2. Mixture

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Directive 67/548/EEC</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>(CAS No) 67-56-1 (EC no) 200-659-6 (EC index no) 603-001-00-X</td>
<td>75 - 99</td>
<td>F; R11 T; R23/24/25 T; R39/23/24/25</td>
<td>Flam. Liq. 2, H225 Acute Tox. 3 (Dermal), H311 Acute Tox. 3 (Inhalation), H331 Acute Tox. 3 (Oral), H301 STOT SE 1, H370</td>
</tr>
<tr>
<td>TETRAMETHYL AMMONIUM HYDROXIDE 25% IN METHANOL</td>
<td>(CAS No) 75-59-2</td>
<td>15 - 25</td>
<td>Not classified</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

Full text of R- and H-phrases: see section 16
**SECTION 4: First aid measures**

4.1. Description of first aid measures

First-aid measures general: Call a POISON CENTER or doctor/physician. Specific treatment (see ... on this label).

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

First-aid measures after skin contact: Immediately call a POISON CENTER or doctor/physician. Remove/Take off immediately all contaminated clothing. Wash with plenty of soap and water. Specific measures (see ... on this label). Wash contaminated clothing before reuse.

First-aid measures after eye contact: Remove contact lenses, if present and easy to do. Continue rinsing. Rinse cautiously with water for several minutes.

First-aid measures after ingestion: Rinse mouth. Obtain emergency medical attention. Immediately call a POISON CENTER or doctor/physician. Specific treatment (see ... on this label).

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries: Causes damage to organs. Causes severe skin burns and eye damage.

Symptoms/injuries after inhalation: Toxic if inhaled.

Symptoms/injuries after skin contact: Toxic in contact with skin.

Symptoms/injuries after ingestion: Toxic if swallowed.

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

Treat symptomatically.

**SECTION 5: Firefighting measures**

5.1. Extinguishing media

Suitable extinguishing media: dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2).

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

5.2. Special hazards arising from the substance or mixture

Fire hazard: Highly flammable liquid and vapour.

5.3. Advice for firefighters

Protection during firefighting: Do not attempt to take action without suitable protective equipment.

**SECTION 6: Accidental release measures**

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Avoid breathing dust/fume/gas/mist/vapours/spray.

Emergency procedures: Stop release.

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Collect spillage. On land, sweep or shovel into suitable containers. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible.

6.4. Reference to other sections

No additional information available
TETRAMETHYL AMMONIUM HYDROXIDE SOLUTION 25% IN METHANOL

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Do not breathe dust/fume/gas/mist/vapours/spray.

Hygiene measures: Do not eat, drink or smoke when using this product. Wash ... thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions: Store in original container. Keep container tightly closed. Store in a dry place. Protect from moisture.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Hand protection: protective gloves

Eye protection: Chemical goggles or safety glasses

Skin and body protection: Wear suitable protective clothing

Respiratory protection: Wear respiratory protection

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Liquid

Colour: Clear Colorless.

Odour: alcoholic odour.

Odour threshold: No data available

pH: No data available

Relative evaporation rate (butylacetate=1): 5.2

Melting point: -97.8 °C

Freezing point: No data available

Boiling point: 63.9 °C

Flash point: 6 °C

Auto-ignition temperature: No data available

Decomposition temperature: No data available

Flammability (solid, gas): Flammable
### TETRAMETHYL AMMONIUM HYDROXIDE SOLUTION 25% IN METHANOL
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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vapour pressure</td>
<td>29 mm Hg (at 20°C)</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>1.1</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>0.8 g/cm³</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water: Soluble in water</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### 9.2. Other information
No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity
No additional information available

#### 10.2. Chemical stability
Highly flammable liquid and vapour.

#### 10.3. Possibility of hazardous reactions
No additional information available

#### 10.4. Conditions to avoid

#### 10.5. Incompatible materials
No additional information available

#### 10.6. Hazardous decomposition products
No additional information available

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

<table>
<thead>
<tr>
<th>Effect</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>Toxic by inhalation, in contact with skin and if swallowed. Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed.</td>
</tr>
<tr>
<td>Irritation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Corrosivity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Sensitisation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Repeated dose toxicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Mutagenicity</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

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Toxicity for reproduction: Not classified

Potential adverse human health effects and symptoms: Toxic if swallowed. Toxic in contact with skin.

SECTION 12: Ecological information

12.1. Toxicity
No additional information available

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Product/Packaging disposal recommendations: Dispose of contents/container to ...
Ecology - waste materials: Hazardous waste due to toxicity.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR) : 3286
UN-No. (IMDG) : 3286
UN-No. (IATA) : 3286
UN-No. (ADN) : 3286
UN-No. (RID) : 3286

14.2. UN proper shipping name
Proper Shipping Name (ADR) : FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.
Proper Shipping Name (IMDG) : FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.
Proper Shipping Name (IATA) : FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.
# TETRAMETHYL AMMONIUM HYDROXIDE SOLUTION 25% IN METHANOL

## Safety Data Sheet

**Proper Shipping Name (ADN)**: FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.

**Proper Shipping Name (RID)**: FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S.

**Transport document description (ADR)**: UN 3286 FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S., 3 (6.1+8), II, (D/E)

**Transport document description (IMDG)**: UN 3286 FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S., 3 (6.1+8), II

**Transport document description (IATA)**: UN 3286 FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S., 3 (6.1+8), II

**Transport document description (ADN)**: UN 3286 FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S., 3 (6.1+8), II

**Transport document description (RID)**: UN 3286 FLAMMABLE LIQUID, TOXIC, CORROSIVE, N.O.S., 3 (6.1+8), II

### 14.3. Transport hazard class(es)

#### ADR

- Transport hazard class(es) (ADR): 3 (6.1, 8)
- Danger labels (ADR): 3, 6.1, 8

#### IMDG

- Transport hazard class(es) (IMDG): 3 (6.1, 8)
- Danger labels (IMDG): 3, 6.1, 8

#### IATA

- Transport hazard class(es) (IATA): 3 (6.1, 8)
- Hazard labels (IATA): 3, 6.1, 8

#### ADN

- Transport hazard class(es) (ADN): 3 (6.1, 8)
- Danger labels (ADN): 3, 6.1, 8

#### RID

- Transport hazard class(es) (RID): 3 (6.1, 8)
- Danger labels (RID): 3, 6.1, 8
## 14.4. Packing group

<table>
<thead>
<tr>
<th>Packing group (ADR)</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packing group (IMDG)</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (IATA)</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (ADN)</td>
<td>II</td>
</tr>
<tr>
<td>Packing group (RID)</td>
<td>II</td>
</tr>
</tbody>
</table>

## 14.5. Environmental hazards

- Dangerous for the environment: No
- Marine pollutant: No
- Other information: No supplementary information available

## 14.6. Special precautions for user

### - Overland transport

<table>
<thead>
<tr>
<th>Classification code (ADR)</th>
<th>FTC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special provision (ADR)</td>
<td>274</td>
</tr>
<tr>
<td>Limited quantities (ADR)</td>
<td>1L</td>
</tr>
<tr>
<td>Excepted quantities (ADR)</td>
<td>E2</td>
</tr>
<tr>
<td>Packing instructions (ADR)</td>
<td>P001, IBC02</td>
</tr>
<tr>
<td>Mixed packing provisions (ADR)</td>
<td>MP19</td>
</tr>
<tr>
<td>Portable tank and bulk container instructions (ADR)</td>
<td>T11</td>
</tr>
<tr>
<td>Portable tank and bulk container special provisions (ADR)</td>
<td>TP2, TP27</td>
</tr>
<tr>
<td>Tank code (ADR)</td>
<td>L4BH</td>
</tr>
<tr>
<td>Tank special provisions (ADR)</td>
<td>TU15</td>
</tr>
<tr>
<td>Vehicle for tank carriage</td>
<td>FL</td>
</tr>
<tr>
<td>Transport category (ADR)</td>
<td>2</td>
</tr>
<tr>
<td>Special provisions for carriage - Loading, unloading and handling (ADR)</td>
<td>CV13, CV28</td>
</tr>
<tr>
<td>Special provisions for carriage - Operation (ADR)</td>
<td>S2, S22</td>
</tr>
<tr>
<td>Hazard identification number (Kemler No.)</td>
<td>368</td>
</tr>
<tr>
<td>Orange plates</td>
<td>368 3286</td>
</tr>
<tr>
<td>Tunnel restriction code (ADR)</td>
<td>D/E</td>
</tr>
<tr>
<td>EAC code</td>
<td>•3WE</td>
</tr>
<tr>
<td>APP code</td>
<td>A(fl)</td>
</tr>
</tbody>
</table>

### - Transport by sea

| Special provision (IMDG) | 274 |
| Limited quantities (IMDG) | 1 L |
| Excepted quantities (IMDG) | E2 |
| Packing instructions (IMDG) | P001 |
| IBC packing instructions (IMDG) | IBC99 |
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Tank instructions (IMDG) : T11
Tank special provisions (IMDG) : TP2, TP13, TP27
EmS-No. (Fire) : F-E
EmS-No. (Spillage) : S-C
Stowage category (IMDG) : B
Stowage and handling (IMDG) : SW2
Segregation (IMDG) : SG5, SG8
MFAG-No : 131

- Air transport
PCA Excepted quantities (IATA) : E2
PCA Limited quantities (IATA) : Y340
PCA limited quantity max net quantity (IATA) : 0.5L
PCA packing instructions (IATA) : 352
PCA max net quantity (IATA) : 1L
CAO packing instructions (IATA) : 363
CAO max net quantity (IATA) : 5L
ERG code (IATA) : 3CP

- Inland waterway transport
Classification code (ADN) : FTC
Special provisions (ADN) : 274, 802
Limited quantities (ADN) : 1 L
Excepted quantities (ADN) : E2
Carriage permitted (ADN) : T
Equipment required (ADN) : PP, EP, EX, TOX, A
Ventilation (ADN) : VE01, VE02
Number of blue cones/lights (ADN) : 2

- Rail transport
Classification code (RID) : FTC
Special provision (RID) : 274
Limited quantities (RID) : 1L
Excepted quantities (RID) : E2
Packing instructions (RID) : P001, IBC02
Mixed packing provisions (RID) : MP19
Portable tank and bulk container instructions (RID) : T11
Portable tank and bulk container special provisions (RID) : TP2, TP27
Tank codes for RID tanks (RID) : L4BH
Special provisions for RID tanks (RID) : T15
Transport category (RID) : 2
Special provisions for carriage – Loading and unloading (RID) : CW13, CW28
Colis express (express parcels) (RID) : CE7
Hazard identification number (RID) : 368

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable
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SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Contains no substances with Annex XVII restrictions
Contains no REACH candidate substance
Contains no REACH Annex XIV substances.

15.1.2. National regulations

Germany
AwSV/VwVwS Annex reference : Water hazard class (WGK) 1, slightly hazardous to water (Classification according to AwSV, Annex 1)
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Denmark
Class for fire hazard : Class I-1
Store unit : 1 liter
Classification remarks : F <Flam. Liq. 2>; Emergency management guidelines for the storage of flammable liquids must be followed
Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Full text of R-, H- and EUH-phrases:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Tox. 3 (Dermal)</td>
<td>Acute toxicity (dermal), Category 3</td>
</tr>
<tr>
<td>Acute Tox. 3 (Inhalation)</td>
<td>Acute toxicity (inhal.), Category 3</td>
</tr>
<tr>
<td>Acute Tox. 3 (Oral)</td>
<td>Acute toxicity (oral), Category 3</td>
</tr>
<tr>
<td>Flam. Liq. 2</td>
<td>Flammable liquids, Category 2</td>
</tr>
<tr>
<td>STOT SE 1</td>
<td>Specific target organ toxicity — single exposure, Category 1</td>
</tr>
<tr>
<td>H225</td>
<td>Highly flammable liquid and vapour</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
<tr>
<td>H370</td>
<td>Causes damage to organs</td>
</tr>
<tr>
<td>R11</td>
<td>Highly flammable</td>
</tr>
<tr>
<td>R23/24/25</td>
<td>Toxic by inhalation, in contact with skin and if swallowed</td>
</tr>
<tr>
<td>R39/23/24/25</td>
<td>Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed</td>
</tr>
<tr>
<td>F</td>
<td>Highly flammable</td>
</tr>
<tr>
<td>T</td>
<td>Toxic</td>
</tr>
</tbody>
</table>

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.