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

- 1.1 Product identifier
- Trade name: Tetramethylammonium Hydroxide solution 25 % for synthesis
- Article number: 167069

- 1.2 Relevant identified uses of the substance or mixture and uses advised against
- No further relevant information available.

- Application of the substance / the mixture
  Chemical for synthesis
  Laboratory chemical

- 1.3 Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
  AppliChem GmbH
  Ottoweg 4
  D-64291 Darmstadt
  Tel.: +49 (0)6151 93570
  msds@applichem.com

- Further information obtainable from: Abteilung Qualitätskontrolle / Dep. Quality Control

- 1.4 Emergency telephone number:
  +49(0)6151 93570 (während der normalen Geschäftszeiten / Inside normal business hours)

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008
  Acute Tox. 3 H301 Toxic if swallowed.
  Acute Tox. 3 H311 Toxic in contact with skin.
  Skin Corr. 1B H314 Causes severe skin burns and eye damage.
  Eye Dam. 1 H318 Causes serious eye damage.
  Aquatic Chronic 4 H413 May cause long lasting harmful effects to aquatic life.

- Classification according to Directive 67/548/EEC or Directive 1999/45/EC
  T; Toxic
  R24/25: Toxic in contact with skin and if swallowed.
  C; Corrosive
  R34: Causes burns.
  R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

- Information concerning particular hazards for human and environment:
  The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- Classification system:
  The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

- 2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008
  The product is classified and labelled according to the CLP regulation.
Trade name: Tetramethylammonium Hydroxide solution 25% for synthesis

- **Hazard pictograms**
  
  ![GHS05](image1) ![GHS06](image2)

- **Signal word** Danger

- **Hazard-determining components of labelling:**
  tetramethylammonium hydroxide

- **Hazard statements**
  H301+H311 Toxic if swallowed or in contact with skin.
  H314 Causes severe skin burns and eye damage.
  H413 May cause long lasting harmful effects to aquatic life.

- **Precautionary statements**
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  P273 Avoid release to the environment.
  P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
  P302+P352 IF ON SKIN: Wash with plenty of soap and water.

- **2.3 Other hazards**

- **Results of PBT and vPvB assessment**
  - PBT: Not applicable.
  - vPvB: Not applicable.

### SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**
  - **Description:** Mixture of substances listed below with nonhazardous additions.
  - **Dangerous components:**
    
    | CAS: 75-59-2 | tetramethylammonium hydroxide |
    | EINECS: 200-882-9 | T+ R27; C R34 |
    |          | Flm. Liq. 1, H224; Acute Tox. 1, H300; Acute Tox. 1, H310; Skin Corr. 1B, H314; Aquatic Chronic 4, H413 |
    | >20–≤25% | |

  - **Additional information:** For the wording of the listed risk phrases refer to section 16.

### SECTION 4: First aid measures

- **4.1 Description of first aid measures**
  - **General information:**
    
    Immediately remove any clothing soiled by the product.
    Involve doctor immediately.
  - **After inhalation:** Supply fresh air or oxygen; call for doctor.
  - **After skin contact:**
    
    Call a doctor immediately.
    Immediately rinse with water.
  - **After eye contact:**
    
    Rinse opened eye for several minutes under running water.
    Call a doctor immediately.
  - **After swallowing:**
    
    make victim drink water (maximum of 2 drinking glasses)
    Call a doctor immediately.
    Do not attempt to neutralize.
  - **4.2 Most important symptoms and effects, both acute and delayed**
    
    Breathing difficulty
SECTION 5: Firefighting measures

- 5.1 Extinguishing media
  - Suitable extinguishing agents: Use fire extinguishing methods suitable to surrounding conditions.
- 5.2 Special hazards arising from the substance or mixture
  - Non-combustible.
  - In case of fire, the following can be released:
    - Nitrogen oxides (NOx)
    - Carbon oxides (CO, CO2).
  - Ambient fire may liberate hazardous vapours.
- 5.3 Advice for firefighters
  - Protective equipment: Wear self-contained respiratory protective device.
  - Additional information
    - Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
    - Cool endangered receptacles with water.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
  - Wear protective equipment. Keep unprotected persons away.
  - Avoid substance contact.
  - Do not inhale steams/aerosols.
- 6.2 Environmental precautions:
  - Inform respective authorities in case of seepage into water course or sewage system.
  - Do not allow to enter sewers/surface or ground water.
- 6.3 Methods and material for containment and cleaning up:
  - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  - Use neutralising agent.
  - Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
  - Cool endangered receptacles with water.
- 6.4 Reference to other sections
  - See Section 7 for information on safe handling.
  - See Section 8 for information on personal protection equipment.
  - See Section 13 for disposal information.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
  - Ensure good ventilation/exhaustion at the workplace.
  - Prevent formation of aerosols.
- 7.2 Conditions for safe storage, including any incompatibilities
  - Storage:
    - Requirements to be met by storerooms and receptacles: Prevent any seepage into the ground.
    - Information about storage in one common storage facility: Not required.
  - Further information about storage conditions:
    - Keep container tightly sealed.
    - Open receptacle only under localised extractor facilities.
SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.

8.1 Control parameters
- Ingredients with limit values that require monitoring at the workplace:
  The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
- Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls
- Personal protective equipment:
- General protective and hygienic measures:
  - Keep away from foodstuffs, beverages and feed.
  - Immediately remove all soiled and contaminated clothing
  - Wash hands before breaks and at the end of work.
  - Store protective clothing separately.
  - Avoid contact with the eyes and skin.
- Respiratory protection:
  - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.
    Filter ABEK
- Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact breakthrough time has to be found out by the manufacturer of the protective gloves and has to be observed.

For the permanent contact gloves made of the following materials are suitable:
Recommended thickness of the material: ≥ 0.6 mm
Natural rubber, NR
Value for the permeation: Level ≥ 480 min

As protection from splashes gloves made of the following materials are suitable:
Nitrile rubber, NBR
Recommended thickness of the material: ≥ 0.11 mm
Value for the permeation: Level ≥ 30 min

Eye protection:

Tightly sealed goggles

Body protection:
Use protective suit.
Full head, face and neck protection  
Protective clothing should be selected specifically for the working place, depending on concentration and quantity of the hazardous substances handled.

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
  - General Information
  - Appearance:
    - Form: Fluid
    - Colour: Colourless
    - Odour: Amine-like
  - pH-value at 20 °C: >13
  - Change in condition
    - Melting point/Melting range: Undetermined.
    - Boiling point/Boiling range: 110 °C
  - Flash point: Not applicable.
  - Self-igniting: Product is not self-igniting.
  - Danger of explosion: Product does not present an explosion hazard.
  - Vapour pressure at 20 °C: 23.33 hPa
  - Density at 20 °C: 1.02 g/cm³
  - Solubility in / Miscibility with water: Soluble.
  - Viscosity:
    - Dynamic: Not determined.
    - Kinematic: Not determined.
  - Solvent content:
    - Organic solvents: 0.0 %
  - **9.2 Other information**
    - No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **10.3 Possibility of hazardous reactions**
  - Reacts with strong acids and oxidising agents.
  - Risk of ignition of inflammable gases or vapors with:
    - ammonium compounds
- **10.4 Conditions to avoid**
  - No further relevant information available.
- **10.5 Incompatible materials**
  - acids
  - nitrates, nitrites, peroxy compounds, strong oxidizing agents
- **10.6 Hazardous decomposition products**
  - No dangerous decomposition products known.
- **Additional information**
  - Incompatible with:
    - metals

(Contd. on page 6)
SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
  - Acute toxicity:
  - Primary irritant effect:
    - on the skin: Caustic effect on skin and mucous membranes.
    - on the eye: Strong caustic effect.
  - After inhalation: Caustic effect on skin and mucous membranes.
  - Sensitisation: No sensitising effects known.
  - Additional toxicological information:
    The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
    - Toxic
    - Corrosive
    Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

SECTION 12: Ecological information

- 12.2 Persistence and degradability: Not easily biodegradable
- 12.3 Bioaccumulative potential: No further relevant information available.
- 12.4 Mobility in soil: No further relevant information available.
- Additional ecological information:
  - General notes:
    - Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
    - Do not allow to enter waters, waste water, or soil.
  - 12.5 Results of PBT and vPvB assessment
    - PBT: Not applicable.
    - vPvB: Not applicable.
  - 12.6 Other adverse effects: No further relevant information available.

SECTION 13: Disposal considerations

- 13.1 Waste treatment methods
  - Recommendation
    Chemicals must be disposed of in compliance with the respective national regulations.
    Must not be disposed together with household garbage. Do not allow product to reach sewage system.
  - Uncleaned packaging:
    Recommendation:
    Disposal must be made according to official regulations.
    Packagings that may not be cleansed are to be disposed of in the same manner as the product.
  - Recommended cleansing agents: Water, if necessary together with cleansing agents.

SECTION 14: Transport information

- 14.1 UN-Number
  - ADR, IMDG, IATA: UN1835
- 14.2 UN proper shipping name
  - ADR, IMDG, IATA: TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION
### 14.3 Transport hazard class(es)
- **ADR**
  - **Class:** 8 (C7) Corrosive substances.
  - **Label:** 8

- **IMDG, IATA**
  - **Class:** 8 Corrosive substances.
  - **Label:** 8

### 14.4 Packing group
- **ADR, IMDG, IATA**
  - **Packing group:** II

### 14.5 Environmental hazards:
- **Marine pollutant:** No

### 14.6 Special precautions for user
- **Danger code (Kemler):** Warning: Corrosive substances.
  - **Code:** 80
- **EMS Number:** F-A,S-B
- **Segregation groups:** Ammonium compounds, alkalis

### 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
- **Transport/Additional information:** Not applicable.

- **ADR**
  - **Limited quantities (LQ):** 1L
  - **Excepted quantities (EQ):** Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

- **IMDG**
  - **Limited quantities (LQ):** 1L
  - **Excepted quantities (EQ):** Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml

- **UN "Model Regulation":** UN1835, TETRAMETHYLAMMONIUM HYDROXIDE SOLUTION, 8, II

### SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - No further relevant information available.

- **15.2 Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.
SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases
H224 Extremely flammable liquid and vapour.
H300 Fatal if swallowed.
H310 Fatal in contact with skin.
H314 Causes severe skin burns and eye damage.
H413 May cause long lasting harmful effects to aquatic life.
R27 Very toxic in contact with skin.
R34 Causes burns.

Department issuing MSDS: Abteilung Qualitätskontrolle / Dept. Quality Control
Contact: Hr. / Mr. Th. Stöckle

Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
Flam. Liq. 1: Flammable liquids, Hazard Category 1
Acute Tox. 1: Acute toxicity, Hazard Category 1
Acute Tox. 3: Acute toxicity, Hazard Category 3
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4