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## Material Safety Data Sheet

### Formic acid MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Tetramethylammonium chloride solution (TMAC)

**Catalog Codes:**

**CAS#:** 75-57-0

**RTECS:** BS7700000

**TSCA:**

**CI#:** Not applicable.

**Synonym:** Methanaminium, N,N,N-trimethyl-, chloride

**Chemical Name:** N,N,N-trimethylmethanaminium chloride

**Chemical Formula:** C<sub>4</sub>H<sub>12</sub>CIN.

**Contact Information for Emergency:** (0086) 551 65418678

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#### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	By Weight%
Tetramethylammonium chloride solution	75-57-0	99%

**Toxicological Data on Ingredients:** Not applicable.

#### Section 3: Hazards Identification

**Classification according to Regulation (EC) No 1272/2008 [EU-GHS/CLP]**

Acute toxicity, Oral (Category 3) Acute toxicity,  
Dermal (Category 3) Skin irritation (Category 2)  
Eye irritation (Category 2)  
Specific target organ toxicity - single exposure (Category 3)

**Classification according to EU Directives 67/548/EEC or 1999/45/EC**

Toxic if swallowed. Harmful in contact with skin. Irritating to eyes, respiratory system and skin.

**Label elements**



Signal word: Danger

**Hazard statement(s)**

H301 :Toxic if swallowed.  
H311:Toxic in contact with skin.  
H315:Causes skin irritation.  
H319:Causes serious eye irritation.  
H335:May cause respiratory irritation.

**Precautionary statement(s)**

P261:Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray  
P280:Wear protective gloves/ protective clothing.  
P301+ P310:IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.  
P305+ P351 + P338:IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P312:Call a POISON CENTER or doctor/ physician if you feel unwell

**According to European Directive 67/548/EEC as amended.**

Hazard symbol(s)



R-phrase(s)

R21 Harmful in contact with skin.  
R25 Toxic if swallowed.  
R36/37/38 Irritating to eyes, respiratory system and skin.

S-phrase(s)

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S36/37 Wear suitable protective clothing and gloves.  
S45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**Section 4: First Aid Measures**

**General advice**

Consult a physician. Show this safety data sheet to the doctor in attendance.

**If inhaled**

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

**In case of skin contact**

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.

**If swallowed**

Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**Most important symptoms and effects, both acute and delayed**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Indication of any immediate medical attention and special treatment needed**

no data available

**Section 5: Fire and Explosion Data**

**Extinguishing media**

**Suitable extinguishing media**

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

**Special hazards arising from the substance or mixture**

Carbon oxides, nitrogen oxides (NOx), Hydrogen chloride gas

**Advice for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Further information**

no data available

**Section 6: Accidental Release Measures**

**Personal precautions, protective equipment and emergency procedures**

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.

**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.

**Reference to other sections**

For disposal see section 13.

**Section 7: Handling and Storage**

**Precautions for safe handling**

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

**Conditions for safe storage, including any incompatibilities**

Store in cool place. 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.

**Specific end uses** no data available

**Section 8: Exposure Controls/Personal Protection**

<p><b>Exposure controls</b></p> <p><b>Appropriate engineering controls</b> Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.</p> <p><b>Personal protective equipment</b></p> <p><b>Eye/face protection</b> Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).</p> <p><b>Skin protection</b> 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. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.</p> <p><b>Body Protection</b> 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.</p> <p><b>Respiratory protection</b> 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).</p>
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<b>Section 9: Physical and Chemical Properties</b>	
Appearance	White to off-white crystals
Melting Point	> 300
Density	1.169 g/cm <sup>3</sup> (20°C)
Solubility	methanol: 0.1 g/ml, clear, colorless
Water Solubility	>60 g/100 mL (20 °C)
Sensitive	Hygroscopic

<b>Section 10: Stability and Reactivity Data</b>	
<b>Reactivity</b>	no data available
<b>Chemical stability</b>	no data available
<b>Possibility of hazardous reactions</b>	no data available
<b>Conditions to avoid</b>	no data available
<b>Incompatible materials</b>	Strong bases, Strong oxidizing agents
<b>Hazardous decomposition products</b>	Other decomposition products - no data available

### Section 11: Toxicological Information

#### Information on toxicological effects

**Acute toxicity** no data available

**Skin corrosion/irritation** no data available

**Serious eye damage/eye irritation** 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.

#### Reproductive toxicity

no data available

#### Specific target organ toxicity - single exposure

no data available

#### Specific target organ toxicity - repeated exposure

no data available

**Aspiration hazard** no data available

#### Potential health effects

**Inhalation** May be harmful if inhaled. Causes respiratory tract irritation.

**Ingestion** Toxic if swallowed.

**Skin** Toxic if absorbed through skin. Causes skin irritation.

**Eyes** Causes serious eye irritation.

#### Signs and Symptoms of Exposure

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

#### Additional Information

RTECS BS7700000

### Section 12: Ecological Information

#### Toxicity

no data available

**Persistence and degradability** no data available

**Bioaccumulative potential** no data available

**Mobility in soil** no data available

**Results of PBT and vPvB assessment**no data available

**Other adverse effects** no data available

### Section 13: Disposal Considerations

#### Waste treatment methods

#### Product

Offer surplus and non-recyclable solutions to a licensed disposal company.

**Contaminated packaging**

Dispose of as unused product.

**Section 14: Transport Information**

**UN number** 2811

**UN proper shipping name**

ADR/RID: TOXIC LIQUID, ORGANIC, N.O.S. (Tetramethylammonium chloride)

IMDG: TOXIC LIQUID, ORGANIC, N.O.S. (Tetramethylammonium chloride)

IATA: Toxic liquid, organic, n.o.s. (Tetramethylammonium chloride)

**Transport hazard class(es)**

ADR/RID: 6.1 IMDG: 6.1 IATA: 6.1

**Packaging group**

ADR/RID: III IMDG: III IATA: II

**Environmental hazards**

ADR/RID: no IMDG Marine pollutant: no IATA: no

**Special precautions for user** no data available

**Section 15: Other Regulatory Information**

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006

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

no data available

**Chemical Safety Assessment**

no data available

**Section 16: Other Information**

**References:** Not available.

**Other Special Considerations:** Not available.

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