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

· 1.1 Product identifier
  · Trade name: Tris(dimethylamino)silane, 99+%, 14-8750, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD
  · Item number: 98-4035
  · CAS Number: 15112-89-7
  · EC number: 239-165-0
· 1.2 Relevant identified uses of the substance or mixture and uses advised against
  No further relevant information available.
· 1.3 Details of the supplier of the safety data sheet
  · Manufacturer/Supplier:
    Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com
  · Further information obtainable from: Technical Department
· 1.4 Emergency telephone number:
  EMERGENCY: CHEMTREC: +1 (800) 424-9300
  During normal opening times: +1 (978) 499-1600

SECTION 2: Hazards identification

· 2.1 Classification of the substance or mixture
  · Classification according to Regulation (EC) No 1272/2008

  ![GHS02 flame]
  Flam. Liq. 3 H226 Flammable liquid and vapour.
  Water-react. 2 H261 In contact with water releases flammable gases.

  ![GHS05 corrosion]
  Skin Corr. 1B H314 Causes severe skin burns and eye damage.

  ![GHS07]
  Acute Tox. 4 H302 Harmful if swallowed.
  Acute Tox. 4 H312 Harmful in contact with skin.
  Acute Tox. 4 H332 Harmful if inhaled.

· 2.2 Label elements
  · Labelling according to Regulation (EC) No 1272/2008
  The substance is classified and labelled according to the CLP regulation.

(Contd. on page 2)
Safety data sheet
according to 1907/2006/EC, Article 31

Trade name: Tris(dimethylamino)silane, 99+%, 14-8750, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD

- **Hazard pictograms**
  - GHS02
  - GHS05
  - GHS07

- **Signal word** Danger

- **Hazard-determining components of labelling:**
  - Tris(dimethylamino)silane, 99+%  

- **Hazard statements**
  - H226 Flammable liquid and vapour.
  - H261 In contact with water releases flammable gases.
  - H302+H312+H332 Harmful if swallowed, in contact with skin or if inhaled.
  - H314 Causes severe skin burns and eye damage.

- **Precautionary statements**
  - P101 If medical advice is needed, have product container or label at hand.
  - P102 Keep out of reach of children.
  - P103 Read label before use.
  - P231+P232 Handle under inert gas. Protect from moisture.
  - P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
  - P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
  - P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
  - P422 Store contents under inert gas.
  - P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Additional information:**
  - EUH029 Contact with water liberates toxic gas.

- **2.3 Other hazards**

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

---

**SECTION 3: Composition/information on ingredients**

- **3.1 Chemical characterisation: Substances**
  - CAS No. Description
    - 15112-89-7 Tris(dimethylamino)silane, 99+%  

- **Identification number(s)**
  - EC number: 239-165-0

---

**SECTION 4: First aid measures**

- **4.1 Description of first aid measures**
  - General information:
    - Immediately remove any clothing soiled by the product.
    - Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
### SECTION 5: Firefighting measures

**5.1 Extinguishing media**
- Suitable extinguishing agents:
  - Sand. Do not use water.
  - CO2, sand, extinguishing powder. Do not use water.
- For safety reasons unsuitable extinguishing agents: Water with full jet

**5.2 Special hazards arising from the substance or mixture**
No further relevant information available.

**5.3 Advice for firefighters**
- Protective equipment: Mouth respiratory protective device.

### SECTION 6: Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures**
- Mount respiratory protective device.
- Wear protective equipment. Keep unprotected persons away.

**6.2 Environmental precautions:** Prevent seepage into sewage system, workpits and cellars.

**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 contaminated material as waste according to item 13.
- Ensure adequate ventilation.
- Do not flush with water or aqueous cleansing agents

**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.
- Open and handle receptacle with care.

**Handling:** Handle under inert gas.

**Information about fire - and explosion protection:**
- Keep ignition sources away - Do not smoke.
- Protect against electrostatic charges.
Keep respiratory protective device available.

7.2 Conditions for safe storage, including any incompatibilities
- Storage: Store contents under inert gas.
- Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Not required.
- Further information about storage conditions:
  - Store in cool, dry conditions in well sealed receptacles.

7.3 Specific end use(s) No further relevant information available.

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: Not required.
- 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.
    - 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.
  - Protection of hands:
    - Protective gloves
      - The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
      - Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
      - 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.
    - Penetration time of glove material
      - The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
  - Eye protection:
    - Tightly sealed goggles

9.1 Information on basic physical and chemical properties
- General Information
  - Appearance:
    - Form: Liquid

(Contd. of page 3)
### Trade name: Tris(dimethylamino)silane, 99+%, 14-8750, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Colour:</strong></td>
<td>Light yellow</td>
</tr>
<tr>
<td><strong>Odour:</strong></td>
<td>Odourless</td>
</tr>
<tr>
<td><strong>Odour threshold:</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>no data °C</td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>145-148(4/16 mm °C)</td>
</tr>
<tr>
<td><strong>Flash point:</strong></td>
<td>Not applicable</td>
</tr>
<tr>
<td><strong>Flammability (solid, gaseous):</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Ignition temperature:</strong></td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature:</td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Self-igniting:</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Danger of explosion:</strong></td>
<td>Product is not explosive. However, formation of explosive air/vapour mixtures are possible.</td>
</tr>
<tr>
<td><strong>Explosion limits:</strong></td>
<td></td>
</tr>
<tr>
<td>Lower:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Upper:</td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Vapour pressure:</strong></td>
<td>16mm (4 °C hPa)</td>
</tr>
<tr>
<td><strong>Density at 20 °C:</strong></td>
<td>0.84 g/cm³</td>
</tr>
<tr>
<td><strong>Relative density</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Vapour density</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Evaporation rate</strong></td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Solubility in / Miscibility with water:</strong></td>
<td>Not miscible or difficult to mix.</td>
</tr>
<tr>
<td><strong>Partition coefficient (n-octanol/water):</strong></td>
<td>Not determined.</td>
</tr>
<tr>
<td><strong>Viscosity:</strong></td>
<td></td>
</tr>
<tr>
<td>Dynamic:</td>
<td>Not determined</td>
</tr>
<tr>
<td>Kinematic:</td>
<td>Not determined</td>
</tr>
<tr>
<td><strong>Solvent content:</strong></td>
<td></td>
</tr>
<tr>
<td>Organic solvents:</td>
<td>0.0 %</td>
</tr>
<tr>
<td>VOC (EC)</td>
<td>0.00 %</td>
</tr>
<tr>
<td><strong>9.2 Other information</strong></td>
<td>No further relevant information available.</td>
</tr>
</tbody>
</table>

### SECTION 10: Stability and reactivity

- **10.1 Reactivity** No further relevant information available.
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **10.3 Possibility of hazardous reactions**
  - Contact with water releases flammable gases.
  - Contact with water releases toxic gases.
- **10.4 Conditions to avoid** No further relevant information available.
- **10.5 Incompatible materials:** No further relevant information available.
**SECTION 11: Toxicological information**

- **11.1 Information on toxicological effects**
  - **Acute toxicity**
    Harmful if swallowed, in contact with skin or if inhaled.
  - **Primary irritant effect:**
    - **Skin corrosion/irritation**
      Causes severe skin burns and eye damage.
    - **Serious eye damage/irritation**
      Causes severe skin burns and eye damage.
  - **Respiratory or skin sensitisation**
    Based on available data, the classification criteria are not met.
  - **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**
    - **Germ cell mutagenicity**
      Based on available data, the classification criteria are not met.
    - **Carcinogenicity**
      Based on available data, the classification criteria are not met.
    - **Reproductive toxicity**
      Based on available data, the classification criteria are not met.
  - **STOT-single exposure**
    Based on available data, the classification criteria are not met.
  - **STOT-repeated exposure**
    Based on available data, the classification criteria are not met.
  - **Aspiration hazard**
    Based on available data, the classification criteria are not met.

**SECTION 12: Ecological information**

- **12.1 Toxicity**
  - **Aquatic toxicity:** No further relevant information available.
- **12.2 Persistence and degradability**
  No further relevant information available.
- **12.3 Bioaccumulative potential**
  No further relevant information available.
- **12.4 Mobility in soil**
  No further relevant information available.
- **Additional ecological information:**
  - **General notes:** Must not reach sewage water or drainage ditch undiluted or unneutralised.
- **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**
    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.

**SECTION 14: Transport information**

- **14.1 UN-Number**
  - **ADR, IMDG, IATA**
    UN3129

(Contd. on page 7)
<table>
<thead>
<tr>
<th><strong>14.2 UN proper shipping name</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADR</strong></td>
<td>3129 WATER-REACTIVE LIQUID, CORROSIVE, N.O.S.</td>
</tr>
<tr>
<td><strong>IMDG</strong></td>
<td>WATER-REACTIVE LIQUID, CORROSIVE, N.O.S.</td>
</tr>
<tr>
<td><strong>IATA</strong></td>
<td>Water-reactive liquid, corrosive, n.o.s.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>14.3 Transport hazard class(es)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADR</strong></td>
<td>![ADR hazard symbol] Class 4.3+8</td>
</tr>
<tr>
<td><strong>IMDG</strong></td>
<td>![IMDG hazard symbol] Class 4.3</td>
</tr>
<tr>
<td><strong>IATA</strong></td>
<td>![IATA hazard symbol] Class 4.3 (8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>14.4 Packing group</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ADR, IMDG, IATA</strong></td>
<td>II</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>14.5 Environmental hazards:</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Marine pollutant:</strong></td>
<td>No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>14.6 Special precautions for user</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMS Number:</strong></td>
<td>F-G,S-N</td>
</tr>
<tr>
<td><strong>Stowage Category:</strong></td>
<td>E</td>
</tr>
<tr>
<td><strong>Stowage Code:</strong></td>
<td>SW3 Shall be transported under temperature control.</td>
</tr>
<tr>
<td><strong>Handling Code:</strong></td>
<td>H1 Keep as dry as reasonably practicable</td>
</tr>
<tr>
<td><strong>Segregation Code:</strong></td>
<td>SG26 In addition: from goods of classes 2.1 and 3 when stowed on deck of a containership a minimum distance of two container spaces athwartship shall be maintained, when stowed on ro-ro ships a distance of 6 m athwartship shall be maintained.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>14.7 Transport in bulk according to Annex II of Marpol and the IBC Code</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Not applicable.</strong></td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

(Contd. of page 6)
Trade name: Tris(dimethylamino)silane, 99+%, 14-8750, contained in 50 ml Swagelok® cylinder (96-1070) for CVD/ALD

- Transport/Additional information:
  - ADR
  - Limited quantities (LQ) 500 ml
  - 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) 0
  - Excepted quantities (EQ) Code: E2
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 500 ml
  - UN "Model Regulation": UN 3129 WATER-REACTIVE LIQUID, CORROSIVE, N.O.S., 4.3 (8), II

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Directive 2012/18/EU
  - Named dangerous substances - ANNEX I Substance is not listed.
  - Seveso category
    - O3 Substances or mixtures with hazard statement EUH029
    - P5c FLAMMABLE LIQUIDS
  - Qualifying quantity (tonnes) for the application of lower-tier requirements 50 t
  - Qualifying quantity (tonnes) for the application of upper-tier requirements 200 t

- 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.

- Department issuing MSDS: Technical Department.
- Contact: Technical Director
- Abbreviations and acronyms:
  - 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
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - VOC: Volatile Organic Compounds (USA, EU)
  - vPvB: very Persistent and very Bioaccumulative
  - Flamm. Liq. 3: Flammable liquids, Hazard Category 3
  - Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2
  - Acute Tox. 4: Acute toxicity, Hazard Category 4
  - Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B