TETRAMETHYL Tin

Safety Data Sheet

Date of issue: 01/13/2015  Revision date: 08/28/2015  Version: 1.1

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

1.1. Product identifier

Product form: Substance
Physical state: Liquid
Substance name: TETRAMETHYL Tin
Product code: SNT7560
Formula: C4H12Sn
Synonyms: TETRAMETHYL STANNANE
Chemical family: ORGANOTIN

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

Use of the substance/mixture: Chemical intermediate
For research and industrial use only

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

1.4. Emergency telephone number

Emergency number: CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)
Flam. Liq. 2 H225
Acute Tox. 3 (Oral) H301
Acute Tox. 3 (Dermal) H311
Acute Tox. 3 (Inhalation/vapour) H331

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling
Hazard pictograms (GHS-US): Danger

Signal word (GHS-US): H225 - Highly flammable liquid and vapor
H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled

Hazard statements (GHS-US): P280 - Wear protective gloves/protective clothing/eye protection/face protection
P261 - Avoid breathing vapors
P312+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing, rinse skin with water/shower

Precautionary statements (GHS-US): P240 - Ground/bond container and receiving equipment
P241 - Use explosion-proof electrical equipment
P264 - Wash hands thoroughly after handling
P304+P310 - If swallowed: Immediately call a doctor
P301+P303 - Rinse mouth
P303+P311+P305 - If on skin (or hair): take off immediately all contaminated clothing, rinse skin with water/shower

08/28/2015  EN (English US)  SDS ID: SNT7560  Page 1
2.3. Other hazards
No additional information available

2.4. Unknown acute toxicity (GHS US)
No data available

SECTION 3: Composition/information on ingredients

3.1. Substance
Substance type: Mono-constituent
Name: TETRAMETHYLTIN
CAS No: 594-27-4
EC no: 209-833-6

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetramethyltin</td>
<td>(CAS No) 594-27-4</td>
<td>95-100</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Oral), H301</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (Dermal), H311</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Acute Tox. 3 (inhalation: vapour), H331</td>
</tr>
</tbody>
</table>

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general:
Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation:
Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison center or doctor/physician.

First-aid measures after skin contact:
Wash with plenty of soap and water. Get immediate medical advice/attention.

First-aid measures after eye contact:
Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion:
Never give anything by mouth to an unconscious person. Immediately call a poison center or doctor/physician.

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

Symptoms/injuries after inhalation:
Toxic if inhaled. Danger of serious damage to health by prolonged exposure through inhalation. At low levels exposure to tetramethyltin may produce coughing, headache and nausea. Tetramethyltin has been reported to cause bradycardia, hypertension, nausea, vomiting, irritation of upper and lower respiratory systems, abrupt variation in sinus rhythm and short term memory loss. At higher levels tetramethyltin has been reported to cause damage to brain cells in the limbic system.

Symptoms/injuries after skin contact:
Toxic in contact with skin. Repeated exposure to this material can result in absorption through skin causing significant health hazard. May cause skin irritation.

Symptoms/injuries after eye contact:
May cause eye irritation. The onset of irritation may not occur until several hours after exposure.

Symptoms/injuries after ingestion:
Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.

Chronic symptoms:
Tetramethyltin has been shown to have similar metabolic products to trimethylchlorotin. Trimethylchlorotin is a cumulative toxin. Symptomatic manifestations can follow exposure up to five days. Reported symptoms include memory loss, exhibition of rage and anger, and reduction of sexual function.

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

Note to physician: Application of corticosteroid creams has been effective in treating severe skin irritation. If blisters develop, they may require abrasion to promote healing.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media:

5.2. Special hazards arising from the substance or mixture
Fire hazard:
Highly flammable liquid and vapor. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame. Moderately toxic by inhalation.

Explosion hazard:
May form flammable/explosive vapor-air mixture.
5.3. Advice for firefighters

Firefighting instructions: Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Remove ignition sources. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

Emergency procedures: Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment: Self-contained breathing apparatus should be worn at all times to avoid inhalation. Equip cleanup crew with proper protection.

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it. Sweep or shovel spills into appropriate container for disposal.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed: Handle empty containers with care because residual vapors are flammable.

Precautions for safe handling:
- Containers must be properly grounded before beginning transfer. Provide good ventilation in process area to prevent accumulation of vapors. Use only non-sparking tools. Use only outdoors or in a well-ventilated area. Avoid breathing vapors.
- Hygiene measures: Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures:
- Proper grounding procedures to avoid static electricity should be followed. Ground/bond container and receiving equipment. Use explosion-proof electrical equipment.

Storage conditions:
- Keep container tightly closed.
- Storage area: Store in a well-ventilated place. Store away from heat.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| Tetramethyltin (594-27-4) | USA OSHA | OSHA PEL (TWA) (mg/m³) | 0.1 mg/m³ as tln (41ppb TMT equiv) |

8.2. Exposure controls

Appropriate engineering controls: Provide local exhaust or general room ventilation. Insure that exhaust is vented properly. caucus scrubbing is recommended.

Personal protective equipment: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection: Neoprene or nitrile rubber gloves.

Eye protection: Chemical goggles or face shield. Contact lenses should not be worn.

Skin and body protection: Wear suitable protective clothing.

Respiratory protection: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| Physical state | Liquid |
| Appearance | Clear liquid |
| Molecular mass | 178.83 g/mol |
## TETRAMETHYLTIN
### Safety Data Sheet

#### SECTION 10: Stability and reactivity

**10.1. Reactivity**

No additional information available

**10.2. Chemical stability**

Stable.

**10.3. Possibility of hazardous reactions**

No additional information available

**10.4. Conditions to avoid**


**10.5. Incompatible materials**

Air. Oxidizing agent. Direct sunlight in air causes slow degradation to an inorganic tin salt. Avoid contact with tin IV chloride as highly toxic trimethylchlorotin may form.

**10.6. Hazardous decomposition products**

Organic acid vapors. Organotin compounds.

#### SECTION 11: Toxicological information

**11.1. Information on toxicological effects**

**Acute toxicity**: Oral: Toxic if swallowed. Dermal: Toxic in contact with skin. Inhalation:vapour: Toxic if inhaled.

<table>
<thead>
<tr>
<th>TETRAMETHYLTIN (594-27-4)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
<td>100,000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>300,000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>3,000 mg/l/4h</td>
</tr>
</tbody>
</table>

**Tetramethyltin (594-27-4)**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>195 - 331 mg/kg</td>
</tr>
<tr>
<td>LD50 intravenous rat</td>
<td>7 - 13 mg/kg</td>
</tr>
<tr>
<td>LCLo inhalation mouse</td>
<td>2550 mg/m³</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>195,000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (dermal)</td>
<td>300,000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>3,000 mg/l/4h</td>
</tr>
</tbody>
</table>

**Color**: Colorless.

**Odor**: No data available

**Odor threshold**: No data available

**Refractive index**: 1.4410

**pH**: No data available

**Relative evaporation rate (butyl acetate=1)**: > 1

**Melting point**: -54 °C

**Freezing point**: No data available

**Boiling point**: 74 - 75 °C

**Flash point**: -12 °C

**Auto-ignition temperature**: No data available

**Decomposition temperature**: No data available

**Flammability (solid, gas)**: Highly flammable liquid and vapor

**Vapor pressure**: 90 mm Hg @ 20˚C

**Relative vapor density at 20 °C**: 6.1

**Relative density**: 1.291

**VOC content**: 100 %

**Solubility**: Insoluble in water.

**Log Pow**: No data available

**Log Kow**: No data available

**Viscosity, kinematic**: No data available

**Viscosity, dynamic**: No data available

**Explosive properties**: No data available

**Oxidizing properties**: No data available

**Explosion limits**: 1.9 vol %

**Flash point**: -12 °C

**Vapor pressure**: 90 mm Hg @ 20˚C

**Relative vapor density at 20 °C**: 6.1

**Relative density**: 1.291

**VOC content**: 100 %

**Solubility**: Insoluble in water.

**Log Pow**: No data available

**Log Kow**: No data available

**Viscosity, kinematic**: No data available

**Viscosity, dynamic**: No data available

**Explosive properties**: No data available

**Oxidizing properties**: No data available

**Explosion limits**: 1.9 vol %

**9.2. Other information**

No additional information available
Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitization: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): Not classified
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Potential Adverse human health effects and symptoms: Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled.
Symptoms/injuries after inhalation: Toxic if inhaled. Danger of serious damage to health by prolonged exposure through inhalation. At low levels exposure to tetramethyltin may produce coughing, headache and nausea. Tetramethyltin has been reported to cause bradycardia, hypertension, nausea, vomiting, irritation of upper and lower respiratory systems, abrupt variation in sinus rhythm and short term memory loss. At higher levels tetramethyltin has been reported to cause damage to brain cells in the limbic system.
Symptoms/injuries after skin contact: Toxic in contact with skin. Repeated exposure to this material can result in absorption through skin causing significant health hazard. May cause skin irritation.
Symptoms/injuries after eye contact: May cause eye irritation. The onset of irritation may not occur until several hours after exposure.
Symptoms/injuries after ingestion: Toxic if swallowed. Swallowing a small quantity of this material will result in serious health hazard.
Chronic symptoms: Tetramethyltin has been shown to have similar metabolic products to trimethylchlorotin. Trimethylchlorotin is a cumulative toxin. Symptomatic manifestations can follow exposure up to five days. Reported symptoms include memory loss, exhibition of rage and anger, and reduction of sexual function.

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. Other adverse effects
Other adverse effects: This substance may be hazardous to the environment.
Effect on ozone layer: No additional information available
Effect on the global warming: No known ecological damage caused by this product.

SECTION 13: Disposal considerations
13.1. Waste treatment methods
Waste disposal recommendations: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
Additional information: Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials: Avoid release to the environment.

SECTION 14: Transport information
14.1. UN number
UN-No.(DOT): 3384
DOT NA no.: UN3384
14.2. UN proper shipping name
Proper Shipping Name (DOT): TOXIC BY INHALATION LIQUID, FLAMMABLE, N.O.S. (TETRAMETHYL Tin)
TETRAMETHYLTIN
Safety Data Sheet

Hazard labels (DOT): 6.1 - Poison
3 - Flammable liquid

DOT Symbols: G - Identifies PSN requiring a technical name

Packing group (DOT): I - Great Danger

DOT Packaging Exceptions (49 CFR 173.xxx): None

DOT Packaging Non Bulk (49 CFR 173.xxx): 227

DOT Packaging Bulk (49 CFR 173.xxx): 244

14.3. Additional information
Other information: No supplementary information available.

Transport by sea
DOT Vessel Stowage Location: D - The material must be stowed “on deck only” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other: 40 - Stow “clear of living quarters”

Air transport
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): Forbidden

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): Forbidden

SECTION 15: Regulatory information
15.1. US Federal regulations
Tetramethyltin (594-27-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
Tetramethyltin (594-27-4)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Canadian NDSSL (Non-Domestic Substances List)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Pollutant Release and Transfer Register Law (PRTR Law)

15.3. US State regulations
TETRAMETHYLTIN (594-27-4)

U.S. - California - Proposition 65 - Carcinogens List: No

U.S. - California - Proposition 65 - Developmental Toxicity: No

U.S. - California - Proposition 65 - Reproductive Toxicity - Female: No

U.S. - California - Proposition 65 - Reproductive Toxicity - Male: No

Tetramethyltin (594-27-4)

U.S. - California - Proposition 65 - Carcinogens List: No

U.S. - California - Proposition 65 - Developmental Toxicity: No

U.S. - California - Proposition 65 - Reproductive Toxicity - Female: No

U.S. - California - Proposition 65 - Reproductive Toxicity - Male: No

No significance risk level (NSRL)
Abbreviations and acronyms:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
<td>Not Determined, No Data</td>
</tr>
<tr>
<td>NA</td>
<td>Not Applicable</td>
</tr>
<tr>
<td>LD</td>
<td>Lethal Dose</td>
</tr>
<tr>
<td>LC</td>
<td>Lethal Concentration</td>
</tr>
<tr>
<td>ATE</td>
<td>Acute Toxicity Estimates</td>
</tr>
<tr>
<td>H</td>
<td>hour</td>
</tr>
<tr>
<td>°</td>
<td>°C unless otherwise stated</td>
</tr>
<tr>
<td>mm</td>
<td>millimeters Hg, torr</td>
</tr>
<tr>
<td>PEL</td>
<td>permissible exposure level</td>
</tr>
<tr>
<td>TWA</td>
<td>time weighted average</td>
</tr>
<tr>
<td>TLV</td>
<td>threshold limit value</td>
</tr>
<tr>
<td>TG</td>
<td>Test Guideline</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety and Health</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>HMIS</td>
<td>Hazardous Material Information System</td>
</tr>
<tr>
<td>CAS No.</td>
<td>Chemical Abstract Service Registration Number</td>
</tr>
<tr>
<td>EC No.</td>
<td>European Commission Registration Number</td>
</tr>
<tr>
<td>EC Index No.</td>
<td>European Commission Index Number</td>
</tr>
<tr>
<td>OECD</td>
<td>The Organisation for Economic Co-operation and Development</td>
</tr>
</tbody>
</table>

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H-Phrase</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:vapour)</td>
<td>Acute toxicity (inhalation:vapor) 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>H225</td>
<td>Highly flammable liquid and vapor</td>
</tr>
<tr>
<td>H301</td>
<td>Toxic if swallowed</td>
</tr>
<tr>
<td>H311</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>H331</td>
<td>Toxic if inhaled</td>
</tr>
</tbody>
</table>

HMIS III Rating:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given</td>
</tr>
<tr>
<td>Flammability</td>
<td>4 Severe Hazard</td>
</tr>
<tr>
<td>Physical</td>
<td>0 Minimal Hazard</td>
</tr>
</tbody>
</table>

Prepared by safety and environmental affairs.

Date of issue: 01/13/2015  Revision date: 08/28/2015  Version: 1.1

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

© 2015 Gelest Inc. Morrisville, PA 19067