

2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE

Safety Data Sheet SIT8567.0

Date of issue: 23/08/2016 Version: 1.0

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1. Product identifier**

| | |
|-----------------|--|
| Product form | : Substance |
| Physical state | : Liquid |
| Substance name | : 2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE |
| Product code | : SIT8567.0 |
| Formula | : C6H15NOSi |
| Synonyms | : TRIMETHYLSILAMORPHOLINE 2,2,4-TRIMETHYL-1,4,2-OXAZASILINANE |
| Chemical family | : ORGANOSILANE |

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 : Chemical intermediate

1.2.2. Uses advised against

No additional information available

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**GELEST INC.**Fritz-Klatte-Strasse 8
65933 Frankfurt**Germany**

T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM

info@gelestde.com - www.gelestde.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 according to Regulation (EC) No. 1272/2008 [CLP]**

| | |
|---|------|
| Flammable liquids, Category 3 | H226 |
| Skin corrosion/irritation, Category 2 | H315 |
| Serious eye damage/eye irritation, Category 2 | H319 |
| Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation | H335 |

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements**Labelling according to Regulation (EC) No. 1272/2008 [CLP]**

Hazard pictograms (CLP) :



GHS02

GHS07

Signal word (CLP) :

: Warning

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| | |
|--------------------------------|--|
| Hazard statements (CLP) | : H226 - Flammable liquid and vapour. H315 - Causes skin irritation. H319 - Causes serious eye irritation. H335 - May cause respiratory irritation. |
| Precautionary statements (CLP) | : P280 - Wear protective gloves/protective clothing/eye protection/face protection. P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P240 - Ground/bond container and receiving equipment. P261 - Avoid breathing vapours. P264 - Wash hands thoroughly after handling. P312 - Call a doctor if you feel unwell. |

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

| | |
|----------------|---|
| Substance type | : Mono-constituent |
| Name | : 2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE |
| CAS-No. | : 10196-49-3 |
| EC-No. | : 233-487-5 |

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|---|--|----------|--|
| 2,2,4-Trimethyl-1-oxa-4-aza-2-silacyclohexane | (CAS-No.) 10196-49-3 (EC-No.) 233-487-5 | 95 - 100 | Flam. Liq. 3, H226 Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335 |

Full text of H-statements: see section 16

3.2. Mixtures

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 person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice. |
| First-aid measures after skin contact | : Wash with plenty of 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 immediate medical advice/attention. |
| First-aid measures after ingestion | : Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell. |

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

| | |
|-------------------------------------|-------------------------------------|
| Symptoms/effects after inhalation | : May cause respiratory irritation. |
| Symptoms/effects after skin contact | : Causes skin irritation. |
| Symptoms/effects after eye contact | : Causes serious eye irritation. |
| Symptoms/effects after ingestion | : May be harmful if swallowed. |

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

| | |
|--------------------------------|--|
| Suitable extinguishing media | : Water spray. Foam. Carbon dioxide. Dry chemical. |
| Unsuitable extinguishing media | : Do not use straight streams. |

5.2. Special hazards arising from the substance or mixture

| | |
|------------------|---|
| Fire hazard | : Flammable liquid and vapour. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame. Liquid generates strong static charge when poured. |
| Explosion hazard | : May form flammable/explosive vapour-air mixture. |

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5.3. Advice for firefighters

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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

6.1.1. For non-emergency personnel

- Protective equipment : Wear protective equipment as described in Section 8.
- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal 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

- For containment : Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.
- Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Use only non-sparking tools.

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 vapours are flammable. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapour and mist. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use only outdoors or in a well-ventilated area. Use only non-sparking tools.
- Hygiene measures : Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.
- Storage conditions : Keep container tightly closed. Keep in a cool place. Store locked up.
- Incompatible materials : Acids. alcohols. Oxidizing agent. Peroxides.
- 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

- No additional information available

8.2. Exposure controls

Appropriate engineering controls:

- Provide local exhaust or general room ventilation.

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. Contact lenses should not be worn

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Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified combination organic vapor - amine gas (brown cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--|--------------------------------|
| Physical state | : Liquid |
| Appearance | : Clear liquid. |
| Molecular mass | : 145.28 g/mol |
| Colour | : No data available |
| Odour | : Pleasant. Mild. |
| Odour threshold | : No data available |
| Refractive index | : 1.435 |
| pH | : No data available |
| Relative evaporation rate (butylacetate=1) | : ~ 1 |
| Melting point | : No data available |
| Freezing point | : < 0 °C |
| Boiling point | : 63 °C @ 47 mm Hg |
| Flash point | : < 60 °C |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : Flammable liquid and vapour. |
| Vapour pressure | : No data available |
| Relative vapour density at 20 °C | : > 1 |
| Relative density | : 0.907 |
| % Volatiles | : 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 |
| Oxidising properties | : No data available |
| Explosive limits | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable in sealed containers in a cool place.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Heat. Open flame. Sparks.

10.5. Incompatible materials

Acids. alcohols. Oxidizing agent. Peroxides.

10.6. Hazardous decomposition products

Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

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| | |
|-------------------------------------|-------------------------------------|
| Skin corrosion/irritation | : Causes skin irritation. |
| Serious eye damage/irritation | : Causes serious eye irritation. |
| Respiratory or skin sensitisation | : Not classified |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : May cause respiratory irritation. |
| STOT-repeated exposure | : Not classified |
| Aspiration hazard | : Not classified |
| Symptoms/effects after inhalation | : May cause respiratory irritation. |
| Symptoms/effects after skin contact | : Causes skin irritation. |
| Symptoms/effects after eye contact | : Causes serious eye irritation. |
| Symptoms/effects after ingestion | : May be harmful if swallowed. |
| Reason for classification | : Expert judgment |

SECTION 12: Ecological information

12.1. Toxicity

| | |
|--------------------------|------------------|
| Acute aquatic toxicity | : Not classified |
| Chronic aquatic toxicity | : Not classified |

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

| | |
|-----------------------|---|
| Other adverse effects | : This substance may be hazardous to the environment. |
|-----------------------|---|

SECTION 13: Disposal considerations

13.1. Waste treatment methods

| | |
|--|--|
| Sewage disposal recommendations | : Do not dispose of waste into sewer. |
| Product/Packaging disposal recommendations | : May be incinerated. 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 vapours are flammable. |
| Ecology - waste materials | : Avoid release to the environment. |

SECTION 14: Transport information

14.1. UN number

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

14.1. UN number

| | |
|---------------|--------|
| UN-No. (ADR) | : 1993 |
| UN-No. (IMDG) | : 1993 |
| UN-No. (IATA) | : 1993 |
| UN-No. (ADN) | : 1993 |
| UN-No. (RID) | : 1993 |

14.2. UN proper shipping name

| | |
|-----------------------------|----------------------------|
| Proper Shipping Name (ADR) | : FLAMMABLE LIQUID, N.O.S. |
| Proper Shipping Name (IMDG) | : FLAMMABLE LIQUID, N.O.S. |
| Proper Shipping Name (IATA) | : Flammable liquid, n.o.s. |
| Proper Shipping Name (ADN) | : FLAMMABLE LIQUID, N.O.S. |
| Proper Shipping Name (RID) | : FLAMMABLE LIQUID, N.O.S. |

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| | |
|---------------------------------------|---|
| Transport document description (ADR) | : UN 1993 FLAMMABLE LIQUID, N.O.S. (2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE), 3, III, (D/E) |
| Transport document description (IMDG) | : UN 1993 FLAMMABLE LIQUID, N.O.S. (2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE), 3, III |
| Transport document description (IATA) | : UN 1993 Flammable liquid, n.o.s. (2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE), 3, III |
| Transport document description (ADN) | : UN 1993 FLAMMABLE LIQUID, N.O.S. (2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE), 3, III |
| Transport document description (RID) | : UN 1993 FLAMMABLE LIQUID, N.O.S. (2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE), 3, III |

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : 3
Danger labels (ADR) : 3



IMDG

Transport hazard class(es) (IMDG) : 3
Danger labels (IMDG) : 3



IATA

Transport hazard class(es) (IATA) : 3
Hazard labels (IATA) : 3



ADN

Transport hazard class(es) (ADN) : 3
Danger labels (ADN) : 3



RID

Transport hazard class(es) (RID) : 3
Danger labels (RID) : 3



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14.4. Packing group

| | |
|----------------------|-------|
| Packing group (ADR) | : III |
| Packing group (IMDG) | : III |
| Packing group (IATA) | : III |
| Packing group (ADN) | : III |
| Packing group (RID) | : III |

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

| | | | |
|---|--|----|------|
| Classification code (ADR) | : F1 | | |
| Special provisions (ADR) | : 274, 601, 640E | | |
| Limited quantities (ADR) | : 5I | | |
| Excepted quantities (ADR) | : E1 | | |
| Packing instructions (ADR) | : P001, IBC03, LP01, R001 | | |
| Mixed packing provisions (ADR) | : MP19 | | |
| Portable tank and bulk container instructions (ADR) | : T4 | | |
| Portable tank and bulk container special provisions (ADR) | : TP1, TP29 | | |
| Tank code (ADR) | : LGBF | | |
| Vehicle for tank carriage | : FL | | |
| Transport category (ADR) | : 3 | | |
| Special provisions for carriage - Packages (ADR) | : V12 | | |
| Special provisions for carriage - Operation (ADR) | : S2 | | |
| Hazard identification number (Kemler No.) | : 30 | | |
| Orange plates | : <table border="1"><tr><td>30</td></tr><tr><td>1993</td></tr></table> | 30 | 1993 |
| 30 | | | |
| 1993 | | | |
| Tunnel restriction code (ADR) | : D/E | | |

- Transport by sea

| | |
|---------------------------------|-----------------|
| Special provisions (IMDG) | : 223, 274, 955 |
| Limited quantities (IMDG) | : 5 L |
| Excepted quantities (IMDG) | : E1 |
| Packing instructions (IMDG) | : P001, LP01 |
| IBC packing instructions (IMDG) | : IBC03 |
| Tank instructions (IMDG) | : T4 |
| Tank special provisions (IMDG) | : TP1, TP29 |
| EmS-No. (Fire) | : F-E |
| EmS-No. (Spillage) | : S-E |
| Stowage category (IMDG) | : A |

- Air transport

| | |
|--|--------|
| PCA Excepted quantities (IATA) | : E1 |
| PCA Limited quantities (IATA) | : Y344 |
| PCA limited quantity max net quantity (IATA) | : 10L |
| PCA packing instructions (IATA) | : 355 |
| PCA max net quantity (IATA) | : 60L |
| CAO packing instructions (IATA) | : 366 |
| CAO max net quantity (IATA) | : 220L |
| Special provisions (IATA) | : A3 |
| ERG code (IATA) | : 3L |

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- Inland waterway transport

| | |
|-----------------------------------|------------------|
| Classification code (ADN) | : F1 |
| Special provisions (ADN) | : 274, 601, 640E |
| Limited quantities (ADN) | : 5 L |
| Excepted quantities (ADN) | : E1 |
| Carriage permitted (ADN) | : T |
| Equipment required (ADN) | : PP, EX, A |
| Ventilation (ADN) | : VE01 |
| Number of blue cones/lights (ADN) | : 0 |

- Rail transport

| | |
|---|---------------------------|
| Classification code (RID) | : F1 |
| Special provisions (RID) | : 274, 601, 640E |
| Limited quantities (RID) | : 5L |
| Excepted quantities (RID) | : E1 |
| Packing instructions (RID) | : P001, IBC03, LP01, R001 |
| Mixed packing provisions (RID) | : MP19 |
| Portable tank and bulk container instructions (RID) | : T4 |
| Portable tank and bulk container special provisions (RID) | : TP1, TP29 |
| Tank codes for RID tanks (RID) | : LGBF |
| Transport category (RID) | : 3 |
| Special provisions for carriage – Packages (RID) | : W12 |
| Colis express (express parcels) (RID) | : CE4 |
| Hazard identification number (RID) | : 30 |

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE is not on the REACH Candidate List

2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE is not on the REACH Annex XIV List

2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

2,2,4-TRIMETHYL-1-OXA-4-AZA-2-SILACYCLOHEXANE is not subject to Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

% Volatiles : 100 %

15.1.2. National regulations

Germany

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen : The substance is not listed

SZW-lijst van mutagene stoffen : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark

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| | |
|-----------------------------|--|
| Class for fire hazard | : Class III-1 |
| Store unit | : 50 liter |
| Classification remarks | : Flammable according to the Danish Ministry of Justice; Emergency management guidelines for the storage of flammable liquids must be followed |
| Danish National Regulations | : Young people below the age of 18 years are not allowed to use the product |

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor

Other information : Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

| | |
|---------------|--|
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| Flam. Liq. 3 | Flammable liquids, Category 3 |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2 |
| STOT SE 3 | Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation |
| H226 | Flammable liquid and vapour. |
| H315 | Causes skin irritation. |
| H319 | Causes serious eye irritation. |
| H335 | May cause respiratory irritation. |

SDS EU (REACH Annex II) - Custom

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