

TRIS(TRIMETHYLSILYL)PHOSPHINE

Safety Data Sheet SIT8723.3

Date of issue: 12/08/2016 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	: TRIS(TRIMETHYLSILYL)PHOSPHINE
Product code	: SIT8723.3
Formula	: C ₉ H ₂₇ PSi ₃
Synonyms	: PHOSPHINE, TRIS(TRIMETHYLSILYL)-
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
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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]**

Pyrophoric Liquids, Category 1	H250
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) :

: Danger

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Hazard statements (CLP)	: H250 - Catches fire spontaneously if exposed to air. 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. P222 - Do not allow contact with air. 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	: TRIS(TRIMETHYLSILYL)PHOSPHINE
CAS-No.	: 15573-38-3

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Tris(trimethylsilyl)phosphine	(CAS-No.) 15573-38-3	97 - 100	Pyr. Liq. 1, H250 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 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. 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. May be harmful if inhaled.
Symptoms/effects after skin contact	: Causes skin irritation. May be harmful in contact with skin.
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	: Catches fire spontaneously if exposed to air. Pyrophoric liquid. Irritating fumes and vapors may develop when material is exposed to water or open flame.
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 every possible source of ignition.

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. 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 : Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Product may ignite spontaneously if exposed to air.
Precautions for safe handling : Avoid all eye and skin contact and do not breathe vapour and mist. Do not allow contact with air. Use only outdoors or in a well-ventilated area.
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

- Storage conditions : Keep container tightly closed. Store locked up. Store under dry nitrogen or argon in sealed containers below 25°C.
Incompatible materials : Acids. alcohols. Moisture. Oxygen. Oxidizing agent. Water.
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

Tris(trimethylsilyl)phosphine (15573-38-3)		
Italy - Portugal - USA ACGIH	ACGIH TWA (ppm)	0.3 ppm Phosphine
USA OSHA	OSHA PEL (TWA) (ppm)	0.3 ppm Phosphine

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:

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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. 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. Oxidizes rapidly and can ignite on contact with air.
Molecular mass	: 250.54 g/mol
Colour	: Straw.
Odour	: Disagreeable.
Odour threshold	: No data available
Refractive index	: 1.5077
pH	: No data available
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: No data available
Freezing point	: 24 - 26 °C neat
Boiling point	: 102 - 105 °C @ 16 mm Hg
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Catches fire spontaneously if exposed to air, Pyrophoric liquid
Vapour pressure	: < 0.5 mm Hg @ 25°C
Relative vapour density at 20 °C	: > 1
Relative density	: 0.867
Solubility	: Reacts with 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 stored under a dry inert atmosphere.

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. Moisture. Oxidizing agent. Oxygen. Water.

10.6. Hazardous decomposition products

Organic acid vapors. Phosphines. Phosphine oxides.

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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified
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
Potential adverse human health effects and symptoms	: This material is expected to have health effects similar to phosphine, but no studies have been conducted.
Symptoms/effects after inhalation	: May cause respiratory irritation. May be harmful if inhaled.
Symptoms/effects after skin contact	: Causes skin irritation. May be harmful in contact with skin.
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

Ecology - water	: Toxic to aquatic life with long lasting effects.
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	: Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.
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)	: 2845
UN-No. (IMDG)	: 2845
UN-No. (IATA)	: 2845
UN-No. (ADN)	: 2845
UN-No. (RID)	: 2845

14.2. UN proper shipping name

Proper Shipping Name (ADR) : PYROPHORIC LIQUID, ORGANIC, N.O.S.

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Proper Shipping Name (IMDG)	: PYROPHORIC LIQUID, ORGANIC, N.O.S.
Proper Shipping Name (IATA)	: Pyrophoric liquid, organic, n.o.s.
Proper Shipping Name (ADN)	: PYROPHORIC LIQUID, ORGANIC, N.O.S.
Proper Shipping Name (RID)	: PYROPHORIC LIQUID, ORGANIC, N.O.S.
Transport document description (ADR)	: UN 2845 PYROPHORIC LIQUID, ORGANIC, N.O.S. (TRIS(TRIMETHYLSILYL)PHOSPHINE), 4.2, I, (B/E)
Transport document description (IMDG)	: UN 2845 PYROPHORIC LIQUID, ORGANIC, N.O.S. (TRIS(TRIMETHYLSILYL)PHOSPHINE), 4.2, I
Transport document description (IATA)	: UN 2845 Pyrophoric liquid, organic, n.o.s. (TRIS(TRIMETHYLSILYL)PHOSPHINE), 4.2
Transport document description (ADN)	: UN 2845 PYROPHORIC LIQUID, ORGANIC, N.O.S. (TRIS(TRIMETHYLSILYL)PHOSPHINE), 4.2, I
Transport document description (RID)	: UN 2845 PYROPHORIC LIQUID, ORGANIC, N.O.S. (TRIS(TRIMETHYLSILYL)PHOSPHINE), 4.2, I

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	: 4.2
Danger labels (ADR)	: 4.2



IMDG

Transport hazard class(es) (IMDG)	: 4.2
Danger labels (IMDG)	: 4.2



IATA

Transport hazard class(es) (IATA)	: 4.2
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ADN

Transport hazard class(es) (ADN)	: 4.2
Danger labels (ADN)	: 4.2



RID

Transport hazard class(es) (RID)	: 4.2
Danger labels (RID)	: 4.2



14.4. Packing group

Packing group (ADR)	: I
Packing group (IMDG)	: I
Packing group (IATA)	: Not applicable

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Packing group (ADN) : I
Packing group (RID) : I

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) : S1
Special provisions (ADR) : 274
Limited quantities (ADR) : 0
Excepted quantities (ADR) : E0
Packing instructions (ADR) : P400
Mixed packing provisions (ADR) : MP2
Portable tank and bulk container instructions (ADR) : T22
Portable tank and bulk container special provisions (ADR) : TP2, TP7
Tank code (ADR) : L21DH
Tank special provisions (ADR) : TU14, TC1, TE21, TM1
Vehicle for tank carriage : AT
Transport category (ADR) : 0
Special provisions for carriage - Packages (ADR) : V1
Special provisions for carriage - Operation (ADR) : S20
Hazard identification number (Kemler No.) : 333
Orange plates :

333
2845

Tunnel restriction code (ADR) : B/E

- Transport by sea

Special provisions (IMDG) : 274
Limited quantities (IMDG) : 0
Excepted quantities (IMDG) : E0
Packing instructions (IMDG) : P400
Special packing provisions (IMDG) : PP31
Tank instructions (IMDG) : T22
Tank special provisions (IMDG) : TP2, TP7
EmS-No. (Fire) : F-G
EmS-No. (Spillage) : S-M
Stowage category (IMDG) : D
Stowage and handling (IMDG) : H1
Segregation (IMDG) : SG63, SG26
Properties and observations (IMDG) : Highly flammable liquids, may ignite spontaneously in moist air. In contact with air, evolve irritating and slightly toxic fumes.

- Air transport

PCA Limited quantities (IATA) : Forbidden
PCA limited quantity max net quantity (IATA) : Forbidden
PCA packing instructions (IATA) : Forbidden
PCA max net quantity (IATA) : Forbidden
CAO packing instructions (IATA) : Forbidden
CAO max net quantity (IATA) : Forbidden
ERG code (IATA) : 4W

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- Inland waterway transport

Classification code (ADN)	: S1
Special provisions (ADN)	: 274
Limited quantities (ADN)	: 0
Excepted quantities (ADN)	: E0
Equipment required (ADN)	: PP
Number of blue cones/lights (ADN)	: 0

- Rail transport

Classification code (RID)	: S1
Special provisions (RID)	: 274
Limited quantities (RID)	: 0
Excepted quantities (RID)	: E0
Packing instructions (RID)	: P400
Mixed packing provisions (RID)	: MP2
Portable tank and bulk container instructions (RID)	: T22
Portable tank and bulk container special provisions (RID)	: TP2, TP7
Tank codes for RID tanks (RID)	: L21DH
Special provisions for RID tanks (RID)	: TU14, TU38, TC1, TE21, TE22, TE25, TM1
Transport category (RID)	: 0
Special provisions for carriage – Packages (RID)	: W1
Hazard identification number (RID)	: 333

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

TRIS(TRIMETHYLSILYL)PHOSPHINE is not on the REACH Candidate List

TRIS(TRIMETHYLSILYL)PHOSPHINE is not on the REACH Annex XIV List

TRIS(TRIMETHYLSILYL)PHOSPHINE 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.

TRIS(TRIMETHYLSILYL)PHOSPHINE 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

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

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

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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
Pyr. Liq. 1	Pyrophoric Liquids, Category 1
Skin Irrit. 2	Skin corrosion/irritation, Category 2
STOT SE 3	Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation
H250	Catches fire spontaneously if exposed to air.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

SDS EU (REACH Annex II) - Custom

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