SECTION 1: Identification

1.1. Identification

Product name: TRIS(TRIMETHYSILYL)PHOSPHINE
Product code: SIT8723.3
Product form: Substance
Physical state: Liquid
Formula: C9H27PSi3
Synonyms: PHOSPHINE, TRIS(TRIMETHYSILYL)-
Chemical family: ORGANO SILANE

1.2. Recommended use and restrictions on use

Recommended use: Chemical intermediate

1.3. Supplier

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: Hazard(s) Identification

2.1. Classification of the substance or mixture

GHS-US classification

Pyrophoric liquids Category 1
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2A
Specific target organ toxicity (single exposure) Category 3

H250 - Catches fire spontaneously if exposed to air
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labelling

Hazard pictograms (GHS US): 

Signal word (GHS US): Danger

Hazard statements (GHS US):
- H250 - Catches fire spontaneously if exposed to air
- H315 - Causes skin irritation
- H319 - Causes serious eye irritation
- H335 - May cause respiratory irritation

Precautionary statements (GHS US):
- P280 - Wear protective gloves/protective clothing/eye protection/face protection.
- P312 - Call a doctor if you feel unwell
- P210 - Keep away from heat, open flames, sparks. - No smoking.
- P222 - Do not allow contact with air.
- P261 - Avoid breathing vapors.
- P241 - Do not allow to enter soil.
- P264 - Wash hands thoroughly after handling.
- P271 - Use only outdoors or in a well-ventilated area.
- P302+P333 - In case of skin contact: Removed all contaminated clothing.
- P303+P361 - In case of ingestion: Do not induce vomiting.
- P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
- P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P332+P337+P338 - IF IN SKIN:Wash thoroughly and repeatedly with water.
- P333+P313 - In case of fire: Use water spray, foam, carbon dioxide, dry chemical to extinguish.
P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P422 - Store contents under nitrogen or argon in sealed containers below 25°C.
TRIS(TRIMETHYLSILYL)PHOSPHINE  
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2.3. Hazards not otherwise classified (HNOC)  
No additional information available

2.4. Unknown acute toxicity (GHS US)  
Not applicable

SECTION 3: Composition/Information on ingredients  
3.1. Substances  
Substance type: Mono-constituent  
Name: TRIS(TRIMETHYLSILYL)PHOSPHINE  
CAS-No.: 15573-38-3

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tris(trimethylsilyl)phosphine</td>
<td>(CAS-No.) 15573-38-3</td>
<td>97 - 100</td>
<td>Pyr. Liq. 1, H250, Skin Irrit. 2, H315, Eye Irrit. 2A, H319, STOT SE 3, H335</td>
</tr>
</tbody>
</table>

Full text of hazard classes and 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 victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact: Wash with plenty of soap and 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 (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. Immediate medical attention and special treatment, if necessary  
No additional information available

SECTION 5: Fire-fighting measures  
5.1. Suitable (and unsuitable) extinguishing media  

Unsuitable extinguishing media: Do not use straight streams.

5.2. Specific hazards arising from the chemical  
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 vapor-air mixture.

5.3. Special protective equipment and precautions for fire-fighters  
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 vapor 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/sparks/open flames/hot surfaces. - No smoking. Product may ignite spontaneously if exposed to air.
Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapor 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.
Storage area: Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection
8.1. Control parameters
<table>
<thead>
<tr>
<th>Tris(trimethylsilyl)phosphine (15573-38-3)</th>
<th>ACGIH</th>
<th>ACGIH TWA (ppm)</th>
<th>0.3 ppm Phosphine</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td></td>
<td></td>
<td>0.3 ppm Phosphine</td>
</tr>
</tbody>
</table>

8.2. Appropriate engineering controls
Appropriate engineering controls: Provide local exhaust or general room ventilation.

8.3. Individual protection measures/Personal protective equipment
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. 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
TRIS(TRIMETHYLSILYL)PHOSPHINE
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Color : Straw.
Odor : Disagreeable.
Odor threshold : No data available
Refractive index : 1.5077
pH : No data available
Relative evaporation rate (butyl acetate=1) : No data available
Melting point : No data available
Freezing point : 24 - 26 °C neat
Boiling point : 102 - 105 °C - initial (hexane)
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
Vapor pressure : < 0.5 mm Hg @ 25°C
Relative vapor 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
Oxidizing properties : No data available
Explosion 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

10.6. Hazardous decomposition products

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 sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
Specific target organ toxicity – single exposure : May cause respiratory irritation.
Specific target organ toxicity – repeated exposure : Not classified
Aspiration hazard : May cause damage to organs through prolonged or repeated exposure
### TRIS(TRIMETHYLSILYL)PHOSPHINE Safety Data Sheet

**Potential Adverse human health effects and symptoms**

<table>
<thead>
<tr>
<th>Symptom</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms/effects after inhalation</td>
<td>May cause respiratory irritation. May be harmful if inhaled.</td>
</tr>
<tr>
<td>Symptoms/effects after skin contact</td>
<td>Causes skin irritation. May be harmful in contact with skin.</td>
</tr>
<tr>
<td>Symptoms/effects after eye contact</td>
<td>Causes serious eye irritation.</td>
</tr>
<tr>
<td>Symptoms/effects after ingestion</td>
<td>May be harmful if swallowed.</td>
</tr>
</tbody>
</table>

**Reason for classification**

- Expert judgment

### SECTION 12: Ecological information

**12.1. Toxicity**

| Ecology - water | Toxic to aquatic life with long lasting effects. |

**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 the ozone layer: No additional information available

### SECTION 13: Disposal considerations

**13.1. Disposal 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**

- UN-No.(DOT): 2845
- DOT NA no.: UN2845

**14.2. UN proper shipping name**

- Transport document description: UN2845 Pyrophoric liquids, organic, n.o.s. (TRIS(TRIMETHYLSILYL)PHOSPHINE), 4.2, I
- Proper Shipping Name (DOT): Pyrophoric liquids, organic, n.o.s. (TRIS(TRIMETHYLSILYL)PHOSPHINE)
- Class (DOT): 4.2 - Class 4.2 - Spontaneously combustible material 49 CFR 173.124
- Packing group (DOT): I - Great Danger
- Hazard labels (DOT): 4.2 - Spontaneously combustible

**14.3. Additional information**

- Emergency Response Guide (ERG) Number: 135
- 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.
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DOT Vessel Stowage Other: 13 - Keep as dry as reasonably practicable. Stow “separated longitudinally by an intervening complete compartment or hold from” explosives.

**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

**TRIS(TRIMETHYLSILYL)PHOSPHINE (15573-38-3)**

| TSCA Exemption/Exclusion | CAUTION: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States. |

**Tris(trimethylsilyl)phosphine (15573-38-3)**
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 15.2. International regulations

**CANADA**
No additional information available

**EU-Regulations**
No additional information available

**National regulations**
No additional information available

#### 15.3. US State regulations

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

### SECTION 16: Other information

Full text of H-phrases:

| H250 | Catches fire spontaneously if exposed to air |
| H315 | Causes skin irritation |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

**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.

**Hazard Rating**

**Health:**
4 Severe Hazard - Life-threatening, major or permanent damage may result from single or repeated overexposures

**Flammability:**
4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)

**Physical:**
2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.

Prepared by safety and environmental affairs.
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