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

1.1 Product identifier

Trade name: Tris(trimethylsilyl)phosphine, min. 98% (10 wt% in hexanes)

Item number: 15-8021

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

H224 Extremely flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The product is classified and labelled according to the CLP regulation.

Signal word Danger

Hazard statements

H224 Extremely flammable liquid and vapour.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

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 Handle under inert gas.

(Contd. on page 2)
Trade name: Tris(trimethylsilyl)phosphine, min. 98% (10 wt% in hexanes)

P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P422 Store contents under inert gas.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

2.3 Other hazards
· Results of PBT and vPvB assessment
  · PBT: Not applicable.
  · vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.2 Chemical characterisation: Mixtures
· Description: Mixture of substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Chemical</th>
<th>PATA</th>
<th>CAS</th>
<th>Description</th>
<th>Risk phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>73513-42-5 hexane</td>
<td>90.0%</td>
<td>Flam. Liq. 2, H225</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15573-38-3 Tris(trimethylsilyl)phosphine, min. 98%</td>
<td>10.0%</td>
<td>Pyr. Sol. 1, H250; Self-heat. 2, H252; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

· Additional information: For the wording of the listed risk phrases refer to section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures
· General information: Immediately remove any clothing soiled by the product.
· After inhalation: In case of unconsciousness place patient stably in side position for transportation.
· After skin contact: Immediately wash with water and soap and rinse thoroughly.
· After eye contact: Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· After swallowing: If symptoms persist consult doctor.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media
· Suitable extinguishing agents: CO2, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
· 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: No special measures required.
SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.

6.2 Environmental precautions:
Do not allow product to reach sewage system or any water course.
Prevent seepage into sewage system, workpits and cellars.
Inform respective authorities in case of seepage into water course or sewage system.

6.3 Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

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
Open and handle receptacle with care.

7.2 Conditions for safe storage, including any incompatibilities

7.2.1 Storage:
Store contents under inert gas.

7.2.2 Requirements to be met by storerooms and receptacles:
Store in a cool location.

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

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:
The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

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:** Use suitable respiratory protective device in case of insufficient ventilation.

· **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. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **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

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### 9.1 Information on basic physical and chemical properties

#### General Information

- **Appearance:**
  - Liquid
  - Colour: Colourless
  - Odour: Pungent
  - Odour threshold: Not determined.

- **pH-value:**
  - Not determined.

- **Change in condition**
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 60 °C

- **Flash point:**
  - 7 °C

- **Flammability (solid, gaseous):**
  - Not determined.

- **Ignition temperature:**
  - Decomposition temperature: Not determined.

- **Self-igniting:**
  - Product is not selfigniting.

- **Danger of explosion:**
  - Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

- **Explosion limits:**
  - Lower: Not determined.
  - Upper: Not determined.

- **Vapour pressure:**
  - Not determined.

- **Density:**
  - Not determined.

- **Relative density**
  - Not determined.

- **Vapour density**
  - Not determined.
Trade name: Tris(trimethylsilyl)phosphine, min. 98% (10 wt% in hexanes)

| · Evaporation rate       | Not determined. |
| · Solubility in / Miscibility with water: | Not miscible or difficult to mix. |
| · Partition coefficient (n-octanol/water): | Not determined. |
| · Viscosity:              |                 |
|   Dynamic:               | Not determined. |
|   Kinematic:             | Not determined. |
| · Solvent content:       |                 |
|   Organic solvents:      | 0.0 %           |
|   VOC (EC)               | 0.00 %          |
| · 9.2 Other information  | No further relevant information available. |

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: No dangerous reactions known.
· 10.4 Conditions to avoid: No further relevant information available.
· 10.5 Incompatible materials: No further relevant information available.
· 10.6 Hazardous decomposition products: No dangerous decomposition products known.

SECTION 11: Toxicological information

· 11.1 Information on toxicological effects:
· Acute toxicity: Based on available data, the classification criteria are not met.
· Primary irritant effect:
· Skin corrosion/irritation: Causes skin irritation.
· Serious eye damage/irritation: Causes serious eye irritation.
· 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.
Trade name: Tris(trimethylsilyl)phosphine, min. 98% (10 wt% in hexanes)

Additional ecological information:

- General notes: Not known to be hazardous to water.
- 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.

- 13.2 Uncleaned packaging:
  - Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

- 14.1 UN-Number
  - ADR, IMDG, IATA UN1993
- 14.2 UN proper shipping name
  - ADR 1993 FLAMMABLE LIQUID, N.O.S.
  - IMDG FLAMMABLE LIQUID, N.O.S.
  - IATA Flammable liquid, n.o.s.
- 14.3 Transport hazard class(es)
  - ADR, IMDG, IATA
    
    - Class 3 Flammable liquids.
    - Label 3
- 14.4 Packing group
  - ADR, IMDG, IATA 1
- 14.5 Environmental hazards:
  - Marine pollutant: No
- 14.6 Special precautions for user
  - Warning: Flammable liquids.
  - EMS Number: F-E, S-E
  - Stowage Category E
- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code
  - Not applicable.
- 14.8 Transport/Additional information:
  - ADR
    - Limited quantities (LQ) 0.5L

(Contd. of page 5)
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 None of the ingredients is listed.
- Seveso category P5a FLAMMABLE LIQUIDS
- Qualifying quantity (tonnes) for the application of lower-tier requirements 10 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 50 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.

- Relevant phrases
  H225 Highly flammable liquid and vapour.
  H250 Catches fire spontaneously if exposed to air.
  H252 Self-heating in large quantities; may catch fire.
  H302 Harmful if swallowed.
  H312 Harmful in contact with skin.
  H315 Causes skin irritation.
  H319 Causes serious eye irritation.
  H332 Harmful if inhaled.
  H335 May cause respiratory irritation.

- 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
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  VOC: Volatile Organic Compounds (USA, EU)
  PBT: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  Flam. Liq. 1: Flammable liquids, Hazard Category 1
  Flam. Liq. 2: Flammable liquids, Hazard Category 2
  Pyr. Sol. 1: Pyrophoric Solids, Hazard Category 1
  Self-heat. 2: Self-Heating Substances and Mixtures, Hazard Category 2
  Acute Tox. 4: Acute toxicity, Hazard Category 4
  Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
  Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
  STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3