1 Identification

· **Product name**
  · Trade name: Tris(1-adamantyl)phosphine, 97%
  · Item number: 15-0935
  · CAS Number: 897665-73-5

· **Details of the supplier of the safety data sheet**
  · Manufacturer/Supplier: Strem Chemicals, Inc.
    7 Mulliken Way
    NEWBURYPORT, MA 01950
    USA
    info@strem.com
  · Information department: Technical Department
  · Emergency telephone number:
    EMERGENCY: CHEMTREC: + 1 (800) 424-9300
    During normal opening times: +1 (978) 499-1600

2 Hazard(s) identification

· **Classification of the substance or mixture**
  The substance is not classified according to the Globally Harmonized System (GHS).

· **Label elements**
  · GHS label elements not applicable
  · Hazard pictograms not applicable
  · Signal word not applicable
  · Hazard statements not applicable

· **Precautionary statements**
  P231 Handle under inert gas.
  P262 Do not get in eyes, on skin, or on clothing.
  P280 Wear protective gloves/protective clothing/eye protection/face protection.
  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.

· **Classification system:**
  · NFPA ratings (scale 0 - 4)
    Health = 0
    Fire = 0
    Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**
  Health = 0
  Fire = 0
  Reactivity = 0

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

(Contd. on page 2)
Trade name: Tris(1-adamantyl)phosphine, 97%

3 Composition/information on ingredients

- Chemical characterization: Substances
- CAS No. Description
  897665-73-5 Tris(1-adamantyl)phosphine, 97%

4 First-aid measures

- Description of first aid measures
  - 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.

- Information for doctor:
  - Most important symptoms and effects, both acute and delayed No further relevant information available.
  - Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

- Extinguishing media
  - Suitable extinguishing agents:
    CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
  - Special hazards arising from the substance or mixture No further relevant information available.

- Advice for firefighters
  - Protective equipment: No special measures required.

6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures Not required.
  - Environmental precautions: No special measures required.
  - Methods and material for containment and cleaning up:
    Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

- 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.

7 Handling and storage

- Handling: Handle under inert gas.
- Precautions for safe handling Open and handle receptacle with care.
- Information about protection against explosions and fires: No special measures required.

- Conditions for safe storage, including any incompatibilities
- Storage: Store contents under inert gas.
- Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Not required.
Trade name: Tris(1-adamantyl)phosphine, 97%

- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

### 8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:** Not required.
- **Additional information:** The lists that were valid during the creation were used as basis.
- **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.
  - **Breathing equipment:**
    - In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **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.
  - **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**

### 9 Physical and chemical properties

- **Information on basic physical and chemical properties**
- **General Information**
  - **Appearance:**
    - **Form:** Powder
    - **Color:** Whitish
    - **Odor:** Odorless
    - **Odor threshold:** Not determined.
### Safety Data Sheet

**Trade name:** Tris(1-adamantyl)phosphine, 97%

#### 4.4.1

- **pH-value:** Not applicable.
- **Change in condition**
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: Undetermined.
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Product is not flammable

#### Ignition temperature:

- **Decomposition temperature:** Not determined.
- **Auto igniting:** Not determined.
- **Danger of explosion:** Product does not present an explosion hazard.

#### Explosion limits:

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

#### Vapor pressure:

- Not applicable.

#### Density:

- Not determined.
- **Relative density**
- **Vapor density**
- **Evaporation rate**

#### Solubility in / Miscibility with Water:

- Insoluble.

#### Partition coefficient (n-octanol/water):

- Not determined.

#### Viscosity:

- Dynamic: Not applicable.
- Kinematic: Not applicable.

#### Solvent content:

- Organic solvents: 0.0 %
- VOC content: 0.0 g/l / 0.00 lb/gl

#### Solids content:

- 100.0 %

#### Other information:

- No further relevant information available.

### 10 Stability and reactivity

#### Reactivity

- No further relevant information available.

#### Chemical stability

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions:** No dangerous reactions known.
- **Conditions to avoid:** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.
11 Toxicological information

- Information on toxicological effects
  - Acute toxicity:
  - Primary irritant effect:
    - on the skin: Irritant to skin and mucous membranes.
    - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.
- Additional toxicological information:
  - Carcinogenic categories
    - IARC (International Agency for Research on Cancer)
      Substance is not listed.
    - NTP (National Toxicology Program)
      Substance is not listed.
    - OSHA-Ca (Occupational Safety & Health Administration)
      Substance is not listed.

12 Ecological information

- Toxicity
  - Aquatic toxicity: No further relevant information available.
  - Persistence and degradability: No further relevant information available.
  - Behavior in environmental systems:
    - Bioaccumulative potential: No further relevant information available.
    - Mobility in soil: No further relevant information available.
  - Additional ecological information:
    - General notes: Not known to be hazardous to water.
    - Results of PBT and vPvB assessment
      - PBT: Not applicable.
      - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

- Waste treatment methods
  - Recommendation:
    Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- uncleaned packagings:
  - Recommendation: Disposal must be made according to official regulations.

14 Transport information

- UN-Number
  - DOT, ADN, IMDG, IATA: not regulated
- UN proper shipping name
  - DOT, ADN, IMDG, IATA: not regulated
Trade name: Tris(1-adamantyl)phosphine, 97%

- Transport hazard class(es)
  - DOT, ADN, IMDG, IATA
    - Class not regulated
- Packing group
  - DOT, IMDG, IATA not regulated
- Environmental hazards:
  - Marine pollutant: No
- Special precautions for user
  - Not applicable.
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
  - Not applicable.
- UN "Model Regulation": not regulated

15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
  - Sara
    - Section 355 (extremely hazardous substances):
      Substance is not listed.
    - Section 313 (Specific toxic chemical listings):
      Substance is not listed.
    - TSCA (Toxic Substances Control Act):
      Substance is not listed.
    - Proposition 65
      - Chemicals known to cause cancer:
        Substance is not listed.
      - Chemicals known to cause reproductive toxicity for females:
        Substance is not listed.
      - Chemicals known to cause reproductive toxicity for males:
        Substance is not listed.
      - Chemicals known to cause developmental toxicity:
        Substance is not listed.
- Carcinogenic categories
  - EPA (Environmental Protection Agency)
    Substance is not listed.
  - TLV (Threshold Limit Value established by ACGIH)
    Substance is not listed.
  - NIOSH-Ca (National Institute for Occupational Safety and Health)
    Substance is not listed.
- GHS label elements not applicable
  - Hazard pictograms not applicable
  - Signal word not applicable
  - Hazard statements not applicable

(Contd. on page 7)
Precautionary statements
- P231 Handle under inert gas.
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- P403+P233 Store in a well-ventilated place. Keep container tightly closed.
- P422 Store contents under inert gas.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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.

- Department issuing SDS: Technical Department.
- Contact: Technical Director
- Date of preparation / last revision 06/16/2017 / -
- Abbreviations and acronyms:
  - IMDG: International Maritime Code for Dangerous Goods
  - DOT: US Department of Transportation
  - IATA: International Air Transport Association
  - ACGIH: American Conference of Governmental Industrial Hygienists
  - CAS: Chemical Abstracts Service (division of the American Chemical Society)
  - NFPA: National Fire Protection Association (USA)
  - HMIS: Hazardous Materials Identification System (USA)
  - VOC: Volatile Organic Compounds (USA, EU)
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - NIOSH: National Institute for Occupational Safety
  - OSHA: Occupational Safety & Health
  - TLV: Threshold Limit Value
  - PEL: Permissible Exposure Limit
  - REL: Recommended Exposure Limit