Tris(N,N-tetramethylene)phosphoric acid triamide

sc-258316

Material Safety Data Sheet

Hazard Alert Code Key:

<table>
<thead>
<tr>
<th></th>
<th>EXTREME</th>
<th>HIGH</th>
<th>MODERATE</th>
<th>LOW</th>
</tr>
</thead>
</table>

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
Tris(N,N-tetramethylene)phosphoric acid triamide

STATEMENT OF HAZARDOUS NATURE
Not considered a hazardous substance according to OSHA 29 CFR 1910.1200.

NFPA

SUPPLIER
Santa Cruz Biotechnology, Inc.
2145 Delaware Avenue
Santa Cruz, California 95060
800.457.3801 or 831.457.3800

EMERGENCY
ChemWatch
Within the US & Canada: 877-715-9305
Outside the US & Canada: +800 2436 2255
(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS
C12-H24-N3-O-P, "phosphoric acid tripyrrolidide", tripyrrolidinophosphate, "tripyrrolidinophosphine oxide"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Max</th>
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</thead>
<tbody>
<tr>
<td>Flammability</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Toxicity</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Body Contact</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Reactivity</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Chronic</td>
<td>0</td>
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</tr>
</tbody>
</table>

CANADIAN WHMIS SYMBOLS
None

EMERGENCY OVERVIEW
RISK

POTENTIAL HEALTH EFFECTS
ACUTE HEALTH EFFECTS
SWALLOWED
■ The material has NOT been classified as “harmful by ingestion”.
This is because of the lack of corroborating animal or human evidence.

EYE
■ Although the liquid is not thought to be an irritant, direct contact with the eye may produce transient discomfort characterized by tearing or conjunctival redness (as with windburn).

SKIN
■ The material is not thought to produce adverse health effects or skin irritation following contact (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
■ The liquid may be miscible with fats or oils and may degrease the skin, producing a skin reaction described as non-allergic contact dermatitis.
The material is unlikely to produce an irritant dermatitis as described in EC Directives.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
■ The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified using animal models).
Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.
■ Inhalation hazard is increased at higher temperatures.

CHRONIC HEALTH EFFECTS

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS RN</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>tris(N,N-tetramethylene)phosphoric acid triamide</td>
<td>6415-07-2</td>
<td>&gt;98</td>
</tr>
</tbody>
</table>

Section 4 - FIRST AID MEASURES

SWALLOWED
- Immediately give a glass of water. - First aid is not generally required. If in doubt, contact a Poisons Information Center or a doctor.

EYE
■ If this product comes in contact with eyes: - Wash out immediately with water. - If irritation continues, seek medical attention.

SKIN
■ If skin or hair contact occurs: - Flush skin and hair with running water (and soap if available). - Seek medical attention in event of irritation.

INHALED
■ If fumes or combustion products are inhaled remove from contaminated area. - Other measures are usually unnecessary.

NOTES TO PHYSICIAN
■ Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

<table>
<thead>
<tr>
<th>Vapour Pressure (mmHG):</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper Explosive Limit (%):</td>
<td>Not available</td>
</tr>
<tr>
<td>Specific Gravity (water=1):</td>
<td>1.120</td>
</tr>
<tr>
<td>Lower Explosive Limit (%):</td>
<td>Not available</td>
</tr>
</tbody>
</table>

EXTINGUISHING MEDIA
■ Foam.
■ Dry chemical powder.

FIRE FIGHTING
■ Alert Emergency Responders and tell them location and nature of hazard.
■ Wear full body protective clothing with breathing apparatus.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS
■ Combustible.
■ Slight fire hazard when exposed to heat or flame.
Combustion products include: carbon dioxide (CO2), nitrogen oxides (NOx), phosphorus oxides (POx), other pyrolysis products typical of burning organic material.

FIRE INCOMPATIBILITY
■ Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.

PERSONAL PROTECTION
Glasses:
Chemical goggles.
Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
- Remove all ignition sources.
- Clean up all spills immediately.

MAJOR SPILLS
- Moderate hazard.
- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
- Avoid all personal contact, including inhalation.
- Wear protective clothing when risk of exposure occurs.

RECOMMENDED STORAGE METHODS
- Metal can or drum
- Packing as recommended by manufacturer.

STORAGE REQUIREMENTS
- Store in original containers.
- Keep containers securely sealed.
- No smoking, naked lights or ignition sources.
- Store in a cool, dry, well-ventilated area.
- Store away from incompatible materials and foodstuff containers.
- Protect containers against physical damage and check regularly for leaks.
- Observe manufacturer’s storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS
The following materials had no OELs on our records
- tris(N,N-tetramethylene)phosphoric acid triamide: CAS:6415-07-2

PERSONAL PROTECTION

RESPIRATOR
- Type A filter of sufficient capacity.
Consult your EHS staff for recommendations

EYE
- Safety glasses with side shields
- Chemical goggles.

HANDS/FEET
- Wear general protective gloves, e.g., light weight rubber gloves.
Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include: such as:
  - frequency and duration of contact,
  - chemical resistance of glove material,
  - glove thickness and
  - dexterity
- Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).
  - When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
  - When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended.
  - Contaminated gloves should be replaced.
Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.
Aprotic solvents may greatly promote the toxic properties of solutes because of their unique ability to penetrate synthetic rubber protective gloves and the skin (butyl rubber gloves are reported to be more satisfactory than others. Neoprene gloves.

**OTHER**
- No special equipment needed when handling small quantities.

**ENGINEERING CONTROLS**
- General exhaust is adequate under normal operating conditions. If risk of overexposure exists, wear an approved respirator.

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### Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL PROPERTIES**

- Liquid.
- Does not mix with water.
- Sinks in water.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Liquid</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>257.31</td>
</tr>
<tr>
<td>Melting Range (°F)</td>
<td>Not available</td>
</tr>
<tr>
<td>Boiling Range (°F)</td>
<td>284-288 (0.1 mm)</td>
</tr>
<tr>
<td>Flash Point (°F)</td>
<td>235</td>
</tr>
<tr>
<td>Decomposition Temp (°F)</td>
<td>Not available</td>
</tr>
<tr>
<td>Autoignition Temp (°F)</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Explosive Limit (%)</td>
<td>Not available</td>
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<tr>
<td>Lower Explosive Limit (%)</td>
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<tr>
<td>Solubility in water (g/L)</td>
<td>Partly miscible</td>
</tr>
<tr>
<td>pH (1% solution)</td>
<td>Not available</td>
</tr>
<tr>
<td>pH (as supplied)</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapour Pressure (mmHg)</td>
<td>Not available</td>
</tr>
<tr>
<td>Relative Vapor Density (air=1)</td>
<td>&gt;1</td>
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<tr>
<td>Evaporation Rate</td>
<td>Not available</td>
</tr>
</tbody>
</table>

**APPEARANCE**

Clear light brown-yellow liquid; does not mix well with water. Soluble in petroleum ether.

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### Section 10 - CHEMICAL STABILITY

**CONDITIONS CONTRIBUTING TO INSTABILITY**

- Presence of incompatible materials.
- Product is considered stable.

**STORAGE INCOMPATIBILITY**

- Avoid contamination of water, foodstuffs, feed or seed.
- Avoid reaction with oxidizing agents.
- Many aprotic (non-hydroxylic) solvents are not inert towards other reagents and care must be taken when using untried combinations of solvents and reagents for the first time.
- Some aprotic solvents have a dramatic effect on reaction rates.

For incompatible materials - refer to Section 7 - Handling and Storage.

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### Section 11 - TOXICOLOGICAL INFORMATION

**tris(N,N-tetramethylene)phosphoric acid triamide**

**TOXICITY AND IRRITATION**

**TRIS(N,N-TETRAMETHYLENE)PHOSPHORIC ACID TRIAMIDE:**
- No significant acute toxicological data identified in literature search.

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### Section 12 - ECOLOGICAL INFORMATION

No data

**Ecotoxicity**

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Persistence: Water/Soil</th>
<th>Persistence: Air</th>
<th>Bioaccumulation</th>
<th>Mobility</th>
</tr>
</thead>
<tbody>
<tr>
<td>tris(N,N-tetramethylene)phosphoric acid triamide</td>
<td>HIGH</td>
<td>No Data Available</td>
<td>LOW</td>
<td>MED</td>
</tr>
</tbody>
</table>

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### Section 13 - DISPOSAL CONSIDERATIONS
Disposal Instructions
All waste must be handled in accordance with local, state and federal regulations.
Legislation addressing waste disposal requirements may differ by country, state and/or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.
A Hierarchy of Controls seems to be common - the user should investigate:
- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)
This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. If it has been contaminated, it may be possible to reclaim the product by filtration, distillation or some other means. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.
DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.
- Recycle wherever possible or consult manufacturer for recycling options.
- Consult Waste Management Authority for disposal.

Section 14 - TRANSPORTATION INFORMATION
NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: DOT, IATA, IMDG

Section 15 - REGULATORY INFORMATION
tris(N,N-tetramethylene)phosphoric acid triamide (CAS: 6415-07-2) is found on the following regulatory lists;
- “US - California Air Toxics “Hot Spots” List (Assembly Bill 2588) Substances for which emissions must be quantified”

Section 16 - OTHER INFORMATION
ND
Substance CAS Suggested codes tris(N, N-tetramethylene)phosphoric 6415-07-2 Mut3; R68 Rep3; acid triamide R63

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Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
A list of reference resources used to assist the committee may be found at: www.chemwatch.net/references.

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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