1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name: Diethylenetriaminepentakis(methylphosphonic acid) solution
Product Code: SC-239750

Recommended use of the chemical and restrictions on use
For research use only. Not intended for diagnostic or therapeutic use.

Details of the supplier of the safety data sheet
Santa Cruz Biotechnology, Inc.
10410 Finnell Street
Dallas, TX 75220
831.457.3800
800.457.3801
scbt@scbt.com

Emergency telephone number
Chemtrec
1.800.424.9300 (Within USA)
+1.703.527.3887 (Outside USA)

2. HAZARDS IDENTIFICATION

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification
Acute toxicity - Oral: Category 4
Acute toxicity - Inhalation (Gases): Category 4
Acute toxicity - Inhalation (Vapors): Category 4
Acute toxicity - Inhalation (Dusts/Mists): Category 2
Skin corrosion/irritation: Category 1 Sub-category B
Serious eye damage/eye irritation: Category 1
Carcinogenicity: Category 1A

Label elements
Signal word: Danger
Hazard statements:
- Fatal if inhaled
- Causes severe skin burns and eye damage
- May cause cancer

Symbols/Pictograms:

Precautionary Statements - Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Wear respiratory protection
Precautionary Statements - Response
Immediately call a POISON CENTER or doctor/physician. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on skin (or hair): Remove immediately all contaminated clothing. Wash contaminated clothing before reuse. If inhaled: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician. If you feel unwell, immediately call a POISON CENTER or doctor/physician. If swallowed: Call a POISON CENTER or doctor/physician if you feel unwell. Rinse mouth. Do NOT induce vomiting.

Precautionary Statements - Storage
Store locked up. Store in a well-ventilated place. Keep container tightly closed.

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC)
Hazards not otherwise classified (HNOC): Not applicable.

Other Information
NFPA
- Health hazards: 3
- Flammability: 0
- Stability: 0
- Physical and chemical properties: -

HMIS
- Health hazards: 3
- Flammability: 0
- Physical hazards: 0
- Personal protection: -

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS No</th>
<th>Molecular Weight</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>15827-60-8</td>
<td>573.20</td>
<td>C9H28N3O15P5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS No.</th>
<th>Weight-%</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylenetriaminepentakis(methylphosphonic acid)</td>
<td>15827-60-8</td>
<td>30 - 60</td>
<td>7180 mg/kg (Rat)</td>
<td>&gt; 7940 mg/kg (Rabbit)</td>
<td>-</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>15 - 40</td>
<td>&gt; 90 mL/kg (Rat)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>7647-01-0</td>
<td>10 - 30</td>
<td>238 - 277 mg/kg (Rat)</td>
<td>&gt; 5010 mg/kg (Rabbit)</td>
<td>1.68 mg/L (Rat) 1 h</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First Aid Measures
General advice: Consult a physician if necessary. Remove to fresh air.
Eye contact: Wash with plenty of water.
Skin Contact: Wash skin with soap and water.
Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.
Ingestion: Never give anything by mouth to an unconscious person. Clean mouth with water.

Most important symptoms and effects, both acute and delayed
Symptoms
No information available.

Indication of any immediate medical attention and special treatment needed
Note to physicians
Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
No information available.

Specific hazards arising from the chemical
Specific hazards arising from the chemical
No information available.

Hazardous combustion products
Carbon oxides. Nitrogen oxides (NOx).

Explosion data
Sensitivity to Mechanical Impact
No information available.

Sensitivity to Static Discharge
No information available.

Protective equipment and precautions for firefighters
Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Personal precautions
Ensure adequate ventilation, especially in confined areas.

Environmental precautions
Environmental precautions
See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Pick up and transfer to properly labeled containers.

7. HANDLING AND STORAGE

Precautions for safe handling
Advice on safe handling
Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities
Storage Conditions
Keep containers tightly closed in a dry, cool and well-ventilated place. Store at room temperature.

Incompatible materials
None known based on information supplied.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION
Control parameters
Exposure Guidelines
Other Information
Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric Acid</td>
<td>Ceiling: 2 ppm</td>
<td>(vacated) Ceiling: 5 ppm</td>
<td>IDLH: 50 ppm</td>
</tr>
<tr>
<td>7647-01-0</td>
<td>(vacated) Ceiling: 7 mg/m³</td>
<td>Ceiling: 5 ppm</td>
<td>Ceiling: 5 ppm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ceiling: 7 mg/m³</td>
<td>Ceiling: 7 mg/m³</td>
</tr>
</tbody>
</table>

NIOSH IDLH Immediately Dangerous to Life or Health

Appropriate engineering controls
Engineering Controls
Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment
Eye/face protection
Wear safety glasses with side shields (or goggles).

Skin and Body Protection
Wear protective gloves and protective clothing.

Respiratory protection
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State
liquid
Appearance
No information available
Odor
No information available

Property
<table>
<thead>
<tr>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Boiling point</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Flash point</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Liquid Density</td>
</tr>
<tr>
<td>1.420 g/mL</td>
</tr>
<tr>
<td>Evaporation rate</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Upper flammability limits</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Lower flammability limit</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Vapor pressure</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Vapor density</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Specific gravity</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Water solubility</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Partition coefficient</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Autoignition temperature</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Explosive properties</td>
</tr>
<tr>
<td>No information available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
</tr>
<tr>
<td>No information available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

Reactivity
Not applicable
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
- Inhalation: No data available.
- Eye contact: No data available.
- Skin Contact: No data available.
- Ingestion: No data available.

Information on toxicological effects
- Symptoms: No information available.

Delayed and immediate effects as well as chronic effects from short and long-term exposure
- Chronic Toxicity: No information available.
- Target Organ Effects: Eyes, Respiratory system, Skin.
- Carcinogenicity: The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>ACGIH</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric Acid</td>
<td></td>
<td>Group 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7647-01-0</td>
<td></td>
<td>Group 3</td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

IARC (International Agency for Research on Cancer) Group 1 - Carcinogenic to Humans
Not classifiable as a human carcinogen
OSHA (Occupational Safety and Health Administration of the US Department of Labor) X - Present

Numerical measures of toxicity - Product Information
- Unknown acute toxicity: No information available
- The following values are calculated based on chapter 3.1 of the GHS document
  - ATEMix (oral): 1429 mg/kg
  - ATEMix (dermal): 10774 mg/kg
  - ATEMix (inhalation-gas): 3755 mg/l
  - ATEMix (inhalation-dust/mist): 0.3 mg/l
  - ATEMix (inhalation-vapor): 11.2 mg/l

12. ECOLOGICAL INFORMATION

Ecotoxicity
- May cause long lasting harmful effects to aquatic life

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to Microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylenetriaminepentakis(methylphosphonic acid) 15827-60-8</td>
<td>-</td>
<td>180 - 252: 96 h Oncorhynchus mykiss mg/L LC50 static 758: 96 h Lepomis macrochirus mg/L LC50 static</td>
<td>-</td>
<td>242.2: 48 h Daphnia magna mg/L LC50</td>
</tr>
<tr>
<td>Hydrochloric Acid 7647-01-0</td>
<td>-</td>
<td>282: 96 h Gambusia affinis mg/L LC50 static</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

0% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Persistence and degradability: No information available.
Bioaccumulation: No information available.
Mobility: No information available.
13. DISPOSAL CONSIDERATIONS

Disposal of wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Do not reuse container.

US EPA Waste Number
D002

14. TRANSPORT INFORMATION

DOT
UN/ID no: UN1789
Hazard Class: 8
Packing Group: II
Proper shipping name: Hydrochloric acid
Reportable Quantity (RQ): (Hydrochloric Acid; RQ (kg)= 2270.00)
Description: UN1789, Hydrochloric acid, 8, II
Emergency Response Guide Number: 157

IMDG
UN/ID no: UN1789
Hazard Class: 8
Packing Group: II
Proper shipping name: Hydrochloric acid
Description: UN1789, Hydrochloric acid, 8, II
EmS-No: F-A, S-B

IATA
UN/ID no: UN1789
Hazard Class: 8
Packing Group: II
Proper shipping name: Hydrochloric acid
Description: UN1789, Hydrochloric acid, 8, II
ERG Code: 8L

15. REGULATORY INFORMATION

International Inventories
All of the components in the product are on the following Inventory lists
TSCA (United States): Canada (DSL/NDSL) Europe (EINECS/ELINCS/NLP) Australia (AICS) South Korea (KECL): China (IECSC) Philippines (PICCS)

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>TSCA</th>
<th>DSL</th>
<th>NSDL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>ENCS</th>
<th>IECSC</th>
<th>KECL</th>
<th>PICCS</th>
<th>AICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylenetriaminepentakis(methylphosphonic acid)</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Water</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Hydrochloric Acid</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

X - Listed
TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
SC-239750 - Diethylenetriaminepentakis(methylphosphonic acid) solution

Revision date 16-Jul-2018

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories
Acute health hazard Yes
Chronic Health Hazard No
Fire hazard No
Sudden release of pressure hazard No
Reactive hazard No

CWA (Clean Water Act)
This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CWA - Reportable Quantities</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
<th>CWA - Hazardous Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric Acid 7647-01-0</td>
<td>5000 lb</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>New Jersey</th>
<th>Massachusetts</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrochloric Acid 7647-01-0</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

Revision note No information available

Disclaimer
The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet