SAFETY DATA SHEET: L-THREONINE

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Revision date: January 21, 2019
Version 10
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1. Chemical Product and Company Identification
   1.1. Identification of the substance: L-Threonine
   1.2. Use of the substance: Various use (drugs, nutritional, industrial)
   1.3. Company identification:
       Manufacturer's Name: Ajinomoto Health & Nutrition North America Inc.
       / Shanghai Ajinomoto Amino Acid Co., Ltd.

   1.4 Contact for Correspondence Japan:
       Ajinomoto Co., Ltd.
       15-1, Kyobashi 1-chome, Chuo-ku, Tokyo 104-8315, Japan
       Tel N°: +81-(0)3-5250-8111
       Fax N°: +81-(0)3-5250-0079

   1.4 Contact for Correspondence Brazil:
       Ajinomoto do Brasil Indústria e Comércio de Alimentos Ltda.
       Rua Vergueiro, 1737, Vila Mariana,
       04101-001-São Paulo- SP, Brazil
       Tel N°: +55 11 5080-6700
       Fax N°: +55 11 5080-6789

   1.4 Contact for Correspondence China:
       Ajinomoto (China) Co., Ltd.
       718 Rongle Dong Road, Songjiang,
       Shanghai 201613 P.R. China
       Tel N°:+86 21 5774-5353
       Fax N°: +86 21 5774-0433

   1.5. Emergency Telephone:
       In continental U.S., Hawaii, Puerto Rico, Canada, Alaska and Virgin Islands contact CHEMTREC at 1-800-424-9300.
       For Japan, Brazil, Europe, China and Asia refer to section 1.4

2. Hazards Identification
   2.1 Classification of the substance
       Physical hazards: Not applicable
       Health hazards: Not applicable
       Environmental hazards: Not applicable

   2.2 Label elements (REGULATION (EC) No.1272/2008)
       Not applicable

   2.3 Other hazards:
       May cause eye and skin irritation.
       It will increase the biological oxygen demand (BOD) of water.

3. Composition, Information on Ingredients
   3.1. Substance
       Common Chemical name: L-Threonine
       Synonyms: (2S,3R)-2-Amino-3-hydroxybutanoic acid
       Formula: C\textsubscript{4}H\textsubscript{9}NO\textsubscript{3}
       Molecular Weight: 119.12
       Composition: 99.0 - 101.0%
       CAS No.: 72-19-5
       EINECS No.: 200-774-1
       IUPAC: L-Thr


4. First-Aid Measures

4.1 Description of first aid measures
   - **Inhalation:** Immediately relocate to a fresh air environment. Rinse mouth with water. If not breathing, give artificial respiration. If breathing becomes difficult, give oxygen and seek medical attention.
   - **Skin Contact:** Wash with soap and copious amounts of water. If irritation persists, seek medical attention.
   - **Eye Contact:** Immediately flush eyes with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating eyelids with fingers. If contact lenses are being worn, remove lenses and continue rinsing. Seek medical attention.
   - **Ingestion:** Rinse mouth with water and seek medical attention.

4.2 Most important symptoms and effects, both acute and delayed

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

5. Fire-fighting measures

5.1 Extinguishing media
   - Water spray, carbon dioxide, dry chemical powder/foam

5.2 Special hazards arising from the substance or mixture
   - Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Upon combustion will result in carbon monoxide, carbon dioxide and nitrogen oxide being released.

5.3 Advice for fire-fighting
   No information available

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures.
   - Use personal protection, make spills wet to prevent the generation of dust and then, sweep up into a closed container.

6.2 Environmental precautions
   - Do not discharge into sewer, river, underground water, etc.

6.3 Methods and material for containment and cleaning up
   - After recovering, wash away spilled area with plenty of water.

6.4 Reference to other sections
   - Personal protection: see section 8

7. Handling and storage

7.1. Precautions for safe handling
   - Follow good industrial practice in housekeeping and personal hygiene. Wear personal protective equipment as outlined in section 8.

7.2. Conditions for safe storage, including any incompatibilities
   - Store in closed containers in a dry area. Avoid humidity, sunlight and high temperature.

8. Exposure controls/personal protection

8.1 Control parameters
   - Contains no substance with occupational exposure limit value

8.2 Exposure controls
   - **Respiratory protection:** Dust mask or appropriate respirator. Utilize local exhaust ventilation.
   - **Protective gloves:** Rubber
   - **Eye protection:** Chemical safety goggles
   - **Other protective equipment:** Wear appropriate laboratory apparel, protect exposed skin.
   - **Occupational exposure limits:** Not established
9. Physical and chemical properties

9.1 Information on basic physical and chemical properties
Appearance: White crystals or crystalline powder
Melting point: 255-257°C (decomposes)
Solubility: 9.00 g/100g H₂O (20°C)
pH: 5.2-6.2 (0.20g in 20mL of H₂O)

9.2 Other data
No data available

10. Stability and reactivity

10.1 Reactivity
The following applies in general to flammable organic substances and mixtures; in correspondingly fine
distribution, when whirled up a dust explosion potential may generally be assumed.

10.2 Chemical stability
Stable under normal temperature and pressures

10.3 Possibility of hazardous reactions
Nitrogen oxides (combustion)

10.4 Conditions to avoid
Humidity and high temperature. In presence of moisture, will oxidize and darken.

10.5 Incompatibility materials
Strong oxidizing agents

10.6 Hazardous decomposition products:
Nitrogen oxides (combustion)

11. Toxicological information

11.1 Information on toxicological effects
Acute oral toxicity: LD₅₀ > 16 g/kg rat
Sensitization: No data available
Mutagenicity: No data available
Primary skin irritation: May cause skin irritation. No specific data available
Primary eye irritation: May cause eye irritation. No specific data available

12. Ecological information

12.1 Toxicity
No data available

12.2 Persistence and degradability
BOD= 0.217 g/g

12.3 Bio accumulative potential
No data available

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
PBT and vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6 Other adverse effects
WGK class (Europe):1 (group classification according to VwVwS / 17 May 1999, Germany)

13. Disposal considerations
Dispose of the material as you would with a non-hazardous material in accordance with all applicable national,
state and local regulations.

14. Transport information
Avoid humidity and high temperature. Prevent damage of the container.
14.1-14.6 Not classified as dangerous in meaning of transport regulations.
14.7 Transport in Bulk according to Annex II of MARPOL 73/78 and the IBC code.
15. Regulatory information

15.1 Safety, health, and environmental regulations/legislation specific for the substance or mixture

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<thead>
<tr>
<th>Major Accident Hazard</th>
<th>Legislation</th>
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<tr>
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<td>Directive 96/82/EC does not apply</td>
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<tr>
<td>Regulation(EC) No.1005/2009 on substances that deplete the ozone layer</td>
<td>not regulated</td>
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<tr>
<td>Regulation (EC) No689/2008 concerning the export and import of dangerous chemicals.</td>
<td>not regulated</td>
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| Substance of very high concern(SVHC) | This product does not contain substance of very high concern above the respective regulatory limit (> 0.1% (w/w) Regulation (EC) No.1907/2006(REACH), Article 57). |

Other National Legislation
None especially.
The information given in this Safety Data Sheet does not replace the user's own assessment of workplace risk as required by national, state and local health and safety legislation.

15.2 Chemical safety assessment
For this product a chemical safety assessment was not carried out.

16. Other information
The information contained in this SDS is, to the best of our knowledge true and accurate. Any recommendations or suggestions made are without guarantee, since the conditions of use are beyond our control.