SAFETY DATA SHEET:

L-ARGININE

The information is provided as a service to our customers and is intended only for their use. This information is based on technical information believed to be reliable and will be revised as new knowledge or experience is gained.

Date of issue: January 6, 2003
Revision date: January 21, 2019 Version 10

Page 1 of 3

1. Chemical Product and Company Identification
1.1. Identification of the substance: L-Arginine
1.2. Use of the substance: Various use (drugs, nutritional, industrial)
1.3. Detail of the supplier of the safety data sheet
   Manufacturer's Name: Ajinomoto Co., Inc.

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

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

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.

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-Arginine
   Synonyms: (2S)-2-Amino-5-guanidinopentanoic acid
   Formula: C₆H₁₄N₄O₂
   Molecular Weight: 174.20
   Composition: 98.5 - 101.0%
   CAS No.: 74-79-3
   EINECS No.: 200-811-1
   IUPAC: L-Arg
### 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**

No information available

**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: 244°C (decomposes)
  Solubility: 14.8 g/100g H₂O (20°C)
  pH: 10.5-12.0 (1.0g 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: 5.1 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
  BOD₅= 0.645 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

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

Other National Legislation

None especially.
The information given in this Safety Data Sheet does not replace the users 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.