

Safety Data Sheet

1. Identification of the Substances and the Organization

Organization : National Institute of Advanced Industrial Science and Technology
 Name (AIST)
 Address : 1-3-1, Kasumigaseki, Chiyoda-ku, Tokyo, Japan
 Department : Reference Material Office, Metrology Management Center,
 The National Metrology Institute of Japan
 Person in Charge : Certified Reference Material Staff
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 Emergency : Same as above
 Contact

Prepared on : November 9, 2010
 Revised on : September 19, 2014
 ID Number : 6017001

Identity of Substance/Mixture : Certified reference material: NMIJ CRM 6017-a L-Arginine
 (L-Arginine)

Recommended Use of the Chemical and Restriction on Use : This reference material can be used calibration of analysis equipment and validation of analysis method/equipment of amino acid analysis. Do not use this reference material for other purposes than testing/research.

2. Hazard Identification

GHS classification : Not applicable
 GHS label element : -
 Signal word : -
 Hazards Statement : -
 Other Hazards Statement : Harmful if inhaled or orally ingested in high concentration. Causes irritation to eyes, throat and mucous membrane. Highly degradable
 Precautionary Statement : [Precaution]
 Use appropriate personal protective equipment so as to avoid inhalation and contact with eyes, skin and clothing.
 [Action]
 If inhaled : Remove victim to fresh air. Keep victim warm with blanket etc. and keep at rest. Get medical advice/attention.
 If on skin : Rinse away with plenty of soap and water. Get medical advice/attention as required.
 If in eyes : Rinse away with clean water immediately. Get medical treatment.
 If ingested : Make victim drink water or salt solution to induce vomiting. Get medical advice/attention if there is any problem.
 [Storage]
 Store in clean desiccator in a light-shielded environment at room temperature (15°C~25°C).
 [Disposal]
 Entrust disposal of this reference material to a professional waste

disposal company licensed by prefectural governor.

The other hazards than the above do not result in classification or are not covered by the GHS.

3. Composition/Component Information

Substance/Mixture : Substance
 Chemical Identity : L- Arginine
 Synonym : L-(+)- Arginine, (S)-5-guanidino-2-aminopentanoic acid
 Content : 99.8%
 Chemical Formula or : $\text{H}_2\text{NC}(\cdot\text{NH})\text{NH}(\text{CH}_2)_3\text{CH}(\text{NH}_2)\text{COOH}$
 Structural Formula
 Molecular Weight : 174.20
 Certified Value Certified value of this reference material is as follows:

Chemical Identify	Certified Value Mass Fraction (Kg/Kg)	Expanded Uncertainty Mass Fraction (Kg/Kg)
L- Arginine (S)-5- guanidino-2-aminopentanoic acid	0.998	0.002

D- Arginine content is negligible. When optical purity is not taken into account, arginine purity (mass fraction) is as follows

Chemical Identify	Certified Value Mass Fraction (Kg/Kg)	Expanded Uncertainty Mass Fraction (Kg/Kg)
L- Arginine (When optical purity is not taken into account)	0.998	0.002

ID Number in Official Gazette : 2-1307
 Act on the Evaluation of Chemical Substances and
 Regulation of Their Manufacture, etc.
 The Industrial Safety and Health Law
 CAS Number : 74-79-3
 Hazardous Ingredient : None

4. First-Aid Measures

If in Eyes : Rinse away thoroughly with clean water immediately. Get medical advice/attention.
 If on Skin : Rinse away with plenty of soap and water. Get medical advice/attention as required.
 If Inhaled : Remove victim to fresh air. Keep victim warm and at rest. Get medical advice/attention.
 If Ingested : Make victim drink water to induce vomiting. Get medical

advice/attention if there is any problem.

5. Fire Fighting Measures

Extinguishing Media	: Water spray, Dry chemical extinguishing agent
Fire-Specific Hazards	: As irritating or toxic gas is generated in the case of fire, use appropriate personal protective equipment to avoid breathing it.
Specific Fire-Fighting Method	: Eliminate ignition sources at the origin of a fire and put out fire by using extinguishing media. Remove movable containers promptly to a safe place. In the case of immovable containers, cool their surroundings with sprayed water.
Protection of Fire-Fighters	: Carry out fire-fighting from the windward in order to avoid breathing hazardous gas. Use personal protective equipment such as compressed air open-circuit self-contained breathing apparatus as necessary.

6. Accidental Release Measures

Personal Precaution, Personal Protective Equipment and Emergency Procedures	: Ventilate the affected areas thoroughly, if it is in an indoor environment, until the clean-up operation is completed. Use appropriate personal protective equipment during the operation to avoid skin contact of splash etc. and inhalation of dust and gas.
Environmental Precautions	: Take precautions to prevent spillage from draining into rivers etc. to adversely impact the environment. Make it sure to appropriately treat contaminated wastewater in order to prevent untreated wastewater from being released into the surrounding environment.
Recovery and Neutralization	: Collect spillage in empty containers. Rinse away the remains with plenty of water.
Prevention of Secondary Disaster	: Mark the restricted area with rope etc. to keep out unauthorized people. Carry out the clean-up operation from the windward and make people on the leeward side evacuate.

7. Handling and Storage Precautions

Handling Engineering Precautions	: Avoid contact with acidic substances as this reference material is alkali. Handle this reference material in dry ambience and use it promptly after opening package as it is highly hygroscopic. Strongly recommended to open package and use this reference material in an environment with relative humidity of about 70% or less.
Precautions	: Avoid rough handling such as turning over, dropping, giving a

shock to or dragging containers.

Prevent spill, overflow and scattering, and avoid dust and vapor generation.

Keep container tightly closed after using this reference material. Wash hands, face etc. thoroughly and gargle after handling this reference material.

Restrict drinking, eating and smoking to a designated area.

Do not bring gloves and other contaminated personal protective equipment into staff room.

Precautions for Safe Handling : Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin and clothing.
Use local ventilation system when using this reference material in an indoor workplace.

Storage

Appropriate Storage Conditions : Store in clean desiccator in a light-shielded environment at room temperature (15°C~25°C).

Engineering : Nothing special

Precautions

Incompatible Substances : No data available

Safe Container : Polyethylene

Packaging Material

8. Exposure Controls/Personal Protection

Threshold Limit Value

Not specified

Permissible Concentration

• ACGIH TLV-TWA : Not specified

• Value recommended by Japan Society for Occupational Health : Not specified

• OSHA PEL TWA : Not specified

Engineering Controls

Ventilation/Exhaust : Keep container tightly closed and install local ventilation system when dust is generated.
Install facilities to rinse eyes and to wash hands and body in the vicinity of a place handling this reference material and label them.

Safety control/ Gas detection : -

Storage Precautions : Store in a clean light-shielded environment at room temperature (15°C~25°C).

Personal Protective Equipment (PPE)

Respiratory System : Dust protective mask

Hands : Protective gloves

- Eyes : Eye protector (Goggle type as necessary)
- Skin and Body : Protective clothing with long sleeves
- Hygiene measure
Treat in accordance with rules on Industrial hygiene and Industrial safety.

9. Physical and Chemical Properties

- Appearance etc. : Powder
- Color : White
- Odor : No data available
- pH : Water-soluble substance is strongly basic
- Melting Point : 207°C (Decomposition point)
- Boiling Point : No data available
- Flash Point : No data available
- Spontaneous Ignition Point : No data available
- Vapor Pressure : No data available
- Specific Gravity : No data available
- Solubility : 8.3g dissolved in 100g water at 0°C and 40g at 25°C. Insoluble in organic solvent.
- Partition Coefficient : n-octanol/water : No data available
- log Po/w

10. Stability and Reactivity

- ◇Stability
 - Changed by light
- ◇Reactivity
 - Strongly basic due to presence of guanidine group. Its aqueous solution absorbs carbon dioxide (CO₂) in air.
- ◇Conditions to Avoid
 - Sunlight, Heat, Air
- ◇Hazardous Decomposition Products
 - Carbon monoxide (CO), Nitrogen oxide

11. Toxicological Information

No data available

12. Ecological Information

Persistence and Degradability

- Degree of degradation: 60% by BOD (METI Existing Chemical Substance Safety Check)
- Degree of degradation: 99% by TOC (METI Existing Chemical Substance Safety Check)

Bioaccumulative Potential

- No data available

Ecotoxicity

- No data available

13. Disposal Considerations

Residual Waste	: Incineration method Incinerate in an incinerator equipped with scrubber. Dispose of this reference material in accordance with applicable legislation and local government ordinance. When the above-mentioned treatments are not possible, entrust disposal of residual waste to a professional waste disposal company licensed by prefectural governor.
Contaminated Container and Package	: Dispose of containers after thoroughly removing their contents.

14. Transport Information

UN Number	: Not applicable
UN	: Not applicable
Classification	
Shipping Name	: -
Marine	: Not applicable
Pollutant	
Precautions	: Transport this reference material carefully while keeping it away from direct sunlight and fire and preventing accidental release due to falling, overturning, etc.

15. Applicable Legislation

- No applicable legislation

16. Other Information

Other

The stated safety information is drawn up based on the materials and data available at present, and does not purport to be all inclusive and shall be used as a guide. Moreover, precautionary information is intended for the normal handling; therefore, if the substances are subjected to a special handling, the appropriate safety measures should be taken according to the use.

The purpose of this safety data is to provide the information, and the use of any information on the data sheet is at the reader's own risk. AIST shall not be held liable for any damage resulting from handling or from contact with the above product.

This Safety Data Sheet (SDS) is prepared based on JIS Z7253, and presents identical information to Material Safety Data Sheet (MSDS) prepared based on JIS Z7250:2010.
