Safety Data Sheet

1. Identification of the Substance/Mixture and the Supplier

Supplier	:	National Institute of Advanced Industrial Science and Technology (AIST)
Address	:	1-3-1 Kasumigaseki, Chiyoda, Tokyo, Japan
Office in Charge	:	Reference Materials Office, Center for Quality Management of Metrology, National Metrology Institute of Japan (NMIJ)
Person in Charge	:	Person in Charge of Certified Reference Materials
Telephone No.	:	+81-29-861-4059 Fax No. : +81-29-861-4009
Emergency Contact	:	Same as above
		Prepared on : March 21, 2013
		Revised on : August 31, 2022
		ID Number : 6020001
Identity of Substance/Mixture	:	Certified reference material: NMIJ CRM 6020-a L-Threonine
Recommended Use of the Chemical and Restriction on Use	:	This reference material can be used, in amino acid analysis, for preparation of standard solution, calibration of analysis equipment and validation of analysis method/equipment. Do not use this reference material for other purposes than testing/research. This CRM is a reference material (specified in the Japanese Industrial Standard (JIS) Q 0030).

2. Hazards Identification

GHS Classification	:	Cannot be classified
GHS Label Element	:	-
Signal Word	:	-
Hazards Statement	:	-
Other Hazards Statement	:	One of essential amino acids and hardly toxic Harmful, however, if inhaled or orally ingested in large amounts. Causes irritation to eyes, throat and mucous membrane.
Precautionary Statement	:	［Safety Precaution］ Use appropriate personal protective equipment so as to avoid inhalation and contact with eyes, skin and clothing. ［First-Aid Measure］ If inhaled : Remove victim to fresh air. Make victim gargle thoroughly. Get medical advice/attention if symptoms are observed. If on skin : Rinse away with plenty of soap and water. Get medical advice/attention if inflammation is observed. If in eyes : Rinse away immediately with plenty of water for 15 minutes or more. Get medical advice/attention if there is any problem. If ingested : Make victim drink plenty of water to induce vomiting.

Get medical advice/attention if there are is problem.
［Storage］
Store in clean desiccator in a light-shielded environment at room temperature (15 °C to 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/Information on Ingredients

Substance/Mixture	:	Substance
Chemical Identity	:	L-Threonine
Synonym	:	(2S,3R)2-amino-3-hydroxy-butanoic acid
Content	:	99.9 %
Chemical Formula or Structural Formula	:	$CH_3CH(OH)CH(NH_2)COOH$
Molecular Weight	:	119.12
Content	:	99.9 %
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (9)-1584 Industrial Safety and Health Act : Published
CAS Number	:	72-19-5

4. First-aid Measures

If in Eyes	:	Rinse away immediately with plenty of water for 15 minutes or more. Get medical advice/attention if there is any problem.
If on Skin	:	Rinse away with plenty of soap and water. Get medical advice/attention if inflammation is observed.
If Inhaled	:	Remove victim to fresh air. Make victim gargle thoroughly. Get medical advice/attention if symptoms are observed.
If Ingested	:	Make victim drink plenty of water to induce vomiting. Get medical advice/attention if there is any problem.
Measures to be taken to protect the person applying first aid	:	Use personal protective equipment.

5. Fire-fighting Measures

Extinguishing Media	:	Water spray, Powder, Foam, Carbon dioxide (CO_2), Dry sand
Fire-Specific Hazards	:	As irritating or toxic fume (or 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

Handling

Engineering Precautions	:	Nothing special
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 to 25 °C).
Engineering Precautions	:	Nothing special
Incompatible Substances	:	No data available
Safe Container Packaging Material	:	Glass

8. Exposure Controls/Personal Protection

Threshold Limit Value

Not specified

Permissible Concentration

・ACGIH TLV-TWA	:	Not specified
・Values 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 clean and light-shielded environment at room temperature (15 °C to 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
・pH	:	No data
・Melting point	:	244 °C (Decomposition point)
・Boiling point	:	No data
・Flashing point	:	No data
・Explosive range	:	No data

・Vapor pressure	:	No data
・Relative vapor density(Air=1)	:	No data
・Specific gravity or bulk specific gravity	:	No data
・Solubility	:	Easily-soluble in water, Almost insoluble in ethanol and ether
・*n*-Octanol/water partition coefficient (Log Po/w)	:	No data
・Auto-ignition temperature	:	No data

10. Stability and Reactivity

Stability
・Stable in normal conditions
Reactivity
・No data available
Conditions to Avoid
・Sunlight, Heat
Hazardous Decomposition Products
・Carbon monoxide (CO), Nitrogen oxide

11. Toxicological Information

Acute Toxicity: Abdominal cavity Rat LD50:3098 mg/kg (L Form)

12. Ecological Information

Persistence and Degradability
・No data available
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 Classification	:	Not applicable
Shipping Name	:	-
Marine Pollutant	:	Not applicable
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. Regulatory Information

・No applicable laws and regulations

16. Other Information

The information in this document is not intended to be exhaustive and is based on currently available information and data. The measures given in this document are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety measures appropriate to each specific application and context of use. This document is intended to provide information and not intended to guarantee anything in handling this reference material.