

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

Person in Charge : Certified Reference Material Staff

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Emergency Contact : Same as above

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Identity of Substance/Mixture : Certified reference material: NMIJ CRM 6025-a
L- cystine

Recommended Use of the Chemical and Restriction on Use : This reference material can be used for 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.
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 : Harmful if inhaled or swallowed. Causes irritation to eyes, skin and mucous membrane if contacted. May cause unwell feeling, nausea, headache, etc. through prolonged exposure.

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. 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 advice/attention.
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 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- cystine
Synonym	:	(<i>R,R</i>)-3-dithio-bis(2-amino-propanoic acid)
Content	:	99 %
Chemical Formula or Structural Formula	:	<chem>HOOCCH(NH2)CH2SSCH2CH(NH2)COOH</chem>
Molecular Weight	:	240.30
Content	:	99 %
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (9)-1587 Industrial Safety and Health Act : 2-(12)-135
CAS Number	:	56-89-3

4. First-aid Measures

If in Eyes	:	Rinse away thoroughly with plenty of 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 and keep warm and at rest. Get medical advice/attention.
If Ingested	:	Make victim drink plenty of water to induce vomiting. Get medical advice/attention if there is any problem.
Predicted immediate and delayed symptoms	:	-
Most important symptom/effect	:	-
Protecting Personnel in emergency measures	:	Use personal protective equipment.

5. Fire-fighting Measures

- Extinguishing Media : Water spray, dry chemical extinguishing agent, foam, carbon dioxide, dry sand.
- 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 : Remove ignition source in the vicinity immediately. Prepare fire-fighting equipment for the possibility of fires.
- 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 : Avoid contact with oxidizing reagents, strong oxidizing substances.
- Local and General Ventilation : When vapor or mist is generated, seal the source, and provide local exhaust ventilation or central ventilation.
- 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	: Nothing special
Precautions	
Safe Container	: Polyethylene, Polypropylene
Packaging Material	
Incompatible materials	: Avoid storage with oxidizing reagents, strong oxidizing substances.

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 a clean 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 with side plates (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 : Odorless
- pH : No data
- Melting point : No data
- 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 : 1.34
- Solubility : Insoluble in water, ethanol and diethyl ether.
Soluble in weak acid and weak alkali solution.
- *n*-Octanol/water partition coefficient (Log Po/w) : No data
- Auto-ignition temperature : No data
- Decomposition temperature : 258~261°C (sealed tube)

10. Stability and Reactivity

◇Stability

- Stable in normal conditions.

◇Reactivity

- Heating with 20 % hydrochloric acid causes racemization of this CRM gradually. By strong alkali reagent, this CRM will decompose into ammonia or pyruvic acid. This CRM will be reduced to L-cysteine by reaction by “tin and hydrochloric acid”, “liquid ammonia and Na” or “excess of thioglycolic acid in neutral solution”.
- This CRM will degrade to L-cysteine by metal ion (for example, Sodium cyanide).

◇Conditions to Avoid

- Sunlight, Heat, contact with strong oxidizing materials

◇Hazardous Decomposition Products

- Carbon monoxide (CO), Nitrogen oxide, Carbon dioxide, Sulfur oxides.

11. Toxicological Information

Acute Toxicity : Upon ingestion, causing nausea, vomiting, abdominal pain, and the like.
Oral Rat LDLo=25 g/kg

12. Ecological Information

Persistence and Degradability

- 98 % by BOD(NH₃)

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 : -
Container : -
grade
ICAO/IATA : -
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. Regulatory Information

• No applicable laws and regulations

16. Other Information

Other

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.
