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
Telephone No.	:	+81-29-861-4059 Fax No. : +81-29-861-4009
Emergency Contact	:	Same as above
		Prepared on : March 11, 2008
		Revised on : August 31, 2022
		ID Number : 6006001
Identity of Substance/Mixture	:	Certified reference material NMIJ CRM 6006-a Urea
Recommended Use of the Chemical and Restriction on Use	:	This reference material may be used for calibration of analysis equipment and evaluation of analytical reagents for determining the quantity of urea, as well as for precision management of analysis equipment and validation of analytical methods and instruments. 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	:	Classification not possible
GHS-labeling element	:	-
Signal word	:	-
Hazard and toxicity information	:	Harmful when inhaled or ingested. Contact with the eyes or mucous membranes may cause irritation. Prolonged exposure may cause symptoms such as discomfort, nausea, or headaches. Good biodegradability. Harmful effects are not likely to be caused under normal handling.
Other toxicity information	:	Considered as a low-hazard material
Cautionary statement	:	[Safety measures] Wear protective glasses, protective clothing, and personal protective equipment. Do not inhale dust. Avoid exposure. Prevent leakage to the environment.

Do not use for purposes other than test and research purposes. Do not use for in vivo tests.
[Emergency measures]
Ingestion: Induce vomiting and drink large amounts of water.
[Storage]
Keep away from ignition sources such as fire or heat, moisture, and oxidizing agents.
Keep out of sunlight in a dry and clean place at room temperature (approximately 15 °C to 25 °C).
[Disposal]
Follow the related regulations and ordinances of the local government.
Use a waste-treatment firm certified by prefectural governor.

Classification is impossible or not applicable for hazards not mentioned above.

3. Composition/Information on Ingredients

Substance or mixture	:	Single substance
Chemical name	:	Urea
Synonyms	:	-
Concentration	:	99.9 % (kg/kg)
Chemical or structural formula	:	CH_4N_2O
Molecular weight	:	60.06
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (2)- 1732 Industrial Safety and Health Act : Published
CAS number	:	57-13-6
Hazardous component	:	None

4. First-aid Measures

Eye contact	:	Flush immediately with plenty of fresh water. Seek medical attention.
Skin contact	:	Wash with plenty of fresh water. Take off contaminated clothing, shoes, etc., and seek medical attention.
Inhalation	:	Seek fresh air and keep warm and rest. Seek medical attention.
Ingestion	:	Rinse the mouth well with water. Contact a physician.
Estimated acute and late symptom	:	-
Most important symptoms and effects	:	-
Protection of first-aiders	:	Use personal protective equipment.

5. Fire-fighting Measures

Extinguishing media	:	Use extinguishing media for peripheral fires. In case of peripheral fire, use all extinguishing agents.
Specific hazards with regard to firefighting	:	Irritant or toxic fume (or gas) may be generated in the event of fire.
Specific methods of firefighting	:	Eliminate the origin of fire and put the fire out with extinguishing media. If possible, move containers to a safe place. If not, cool the peripheral areas with water spray.
Protection for firefighters	:	Work from the windward side to prevent the inhalation of toxic gas. Use fire-prevention clothing, fireproof clothing, fire-protection clothing, respirator, circulating oxygen breathing apparatus, rubber gloves, and rubber boots.

6. Accidental Release Measures

Personal precautions	:	Promptly remove all potential ignition sources from peripheral areas. In case of ignition, prepare the equipment for firefighting.
Protective equipment and emergency measures	:	When accidental release takes place indoors, thoroughly clear the air until the emergency measures are complete. Before the operation, wear appropriate protective equipment to protect the skin from droplets and to prevent inhalation of dust and gas.
Environmental precautions	:	Prevent the released product from being drained into a river or other such area that may have impact the environment. Prevent the polluted discharge from being drained into the environment without being processed properly.
Recovery and neutralization	:	Absorb spills with waste, dust cloth, sand or earth and collect into an empty container. Wash with plenty of water.
Prevention of second accident	:	Surround the area by a rope, etc., to prevent unauthorized people from entering it. Work from the windward side and evacuate people to the leeward side.

7. Handling and Storage

Handling

Technical measures	:	Fire prohibited. Avoid high temperature, sparks, and contact with strong oxidizing agents.
Local ventilation and general ventilation	:	In case steam or mist is generated, seal the source and provide local exhaust ventilation.
Precautions for safe handling	:	Avoid rough handling such as dropping, shocking, dragging, or otherwise agitating the container. Do not cause the substance to leak or overflow, and prevent steam from being generated. Seal the container after use. Wash hands, face, and other necessary parts thoroughly, and gargle after handling.

Do not eat, drink, or smoke in places other than the designated areas.
Do not bring gloves and other contaminated protective equipment into the break area.
Only authorized people are allowed in the handling area.
Wear appropriate protective equipment to prevent inhalation, or contact with eyes, skin, or clothing.
When handling indoors, provide local exhaust ventilation.

Storage

Appropriate storage conditions	:	Keep out of sunlight in a dry and clean place at room temperature (approximately 15 °C to 25 °C).
Safe packaging materials	:	Glass

8. Exposure Controls/Personal Protection

Standard control concentration

N/A

Threshold limit values

・ACGIH TLV-TWA	:	N/A
・Value recommended by Japanese Society of Occupational Health	:	N/A
・OSHA PEL TWA	:	N/A

Engineering controls

Ventilation and emission	:	Local exhaust ventilation or general ventilation.
Safety management and gas detection	:	-
Storage precautions	:	Ventilation along the floor. Air-tight. Keep away from combustible, reducing materials, and strong oxidizing agents.

Protective equipment

Respiratory protection	:	Dust mask
Hand protection	:	Protective gloves
Eye protection	:	Safety glasses
Skin and body protection	:	Protective clothing, protective boots
Hygiene measures	:	Avoid any exposure.

9. Physical and Chemical Properties

・Appearance, etc.	:	Crystal powder
・Color	:	White
・Odor	:	Characteristic odor
・pH	:	No data
・Melting point	:	132 °C to 136 °C

・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	:	1.32
・Solubility	:	Easily soluble in water and ethanol. Soluble in benzene. Hardly soluble in ether.
・*n*-Octanol/water partition coefficient (Log Po/w)	:	Varies from -3.00 to -1.54
・Auto-ignition temperature	:	No data

10. Stability and Reactivity

◇Stability

・Stable under normal conditions

◇Reactivity

・No data

◇Conditions to avoid

・No data

◇Hazardous decomposition products

・No data

11. Toxicological Information

Acute toxicity	Oral Rat LD_{50} = 8471 mg/kg Oral Rat (male)LD_{50} = 14300 mg/kg (CERI) Intraperitoneal Rat LD_{50} > 5 g/kg Subcutaneous Rat LD_{50} = 8200 mg/kg Intravenous Rat LD_{50} = 5300 mg/Kg Oral Mouse LD_{50} = 11 g/kg Subcutaneous Mouse LD_{50} = 9200 mg/kg
Skin corrosive/irritation	Human skin 22 mg/3Day intermittent: slight irritation Evaluated as “no irritation” by 20 hour semi-occlusive application to rabbit skin
Serious eye damage/eye irritation	Evaluated as “no irritation” after 24 hours after application on rabbit.
Skin sensitization	Evaluated as “no sensitization” after application of 10% solution on the human skin.
Original generative cell variation	DNA control: Human lymphocytes 600 mmol/L DNA damage: Hamster fibroblasts 8 mol/L Chromosome aberration test: Human white blood cells 50 mmol/L Positive in chromosome aberration test using mouse bone marrow cell (in vivo mutagenicity test using somatic cells) and

	high dose test, and insufficient data for classification.
Carcinogenicity	Screening tests on chronic toxicity and carcinogenicity by oral administration on mouse or rat showed no increased tumor frequency on any animals.
Specification target internal organs/whole toxicity (repeat revelation)	Screening tests on chronic toxicity and carcinogenicity by 12-month oral administration on mouse and rat showed NOAEL= 2250 mg/kg bw(rat) and 6750 mg/kg/day(mouse).

12. Ecological Information

Degradability/Concentration

・Readily degradable
Degradability: 0 % by BOD
Degradability: 54 % by TOC
Degradability: 54 % by HPLC

Bioaccumulation

・No data

Ecotoxicity

・Fish toxicity
Tilapia LC_{50} = 22500 mg/L/96 hours

・Acute toxicity
Daphnia magna EC50 > 10000 mg/L/24 hours
Algae: Toxic threshold > 10000 mg/L/192 hours

・Chronic toxicity
Algae: Toxic threshold > 10000 mg/L/192 hours

13. Disposal Considerations

Residues	:	Incineration Incinerate in the incinerator with a scrubber system. Dispose the contents and container in accordance with related regulations and ordinances of the local government. If disposal according to the above method is not possible, use a waste-treatment firm certified by prefectural governor.
Contaminated containers and packaging	:	To dispose of an empty container, completely remove the contents.

14. Transport Information

UN number	:	Not applicable
UN classification	:	Not applicable
Product name	:	-
Packing group	:	-
ICAO/IATA	:	-
Marine pollutant	:	Not applicable

Precautions	:	Transfer with care avoiding direct sunlight, leakage or spill due to fall etc., keep away from fire sources

15. Regulatory Information

Not applicable

◎ This SDS is originally prepared for the use of the material in Japan, thus the stated laws and regulations are stipulated and carried out in Japan. The use of the material in other countries should be referred to and by application of the relevant laws and regulations of the country in which the material will be used.

16. Other Information

Others

The information in this Safety Data Sheet is not intended to be exhaustive and is based on currently-available information and data. The precautions given in this data sheet are applicable only to normal handling conditions. When handling this reference material under special conditions etc., it is recommended to take safety precautions appropriate to each specific application and context of use. This Safety Data Sheet (SDS) is intended to provide information and not intended to guarantee anything in handling the reference material.