Safety Data Sheet

National Institute of Advanced Industrial Science and Technology
AIST

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 : May 23, 2008
		Revised on : March 31, 2017
		ID Number : 1102001
Identity of Substance/Mixture	:	Reference material: NMIJ RM 1102-a Reference material for thermal expansion (Glass-like carbon)
Recommended Use of the Chemical and Restriction on Use	:	This RM is intended to be used in calibrating push-rod dilatometers and thermomechanical analyzers or as a reference specimen in thermal expansion measurements. Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS Classification	:	Not classified Flammable Solid (Powder form) :
GHS label element	:	–
Signal Word	:	–
Other Hazards Statement	:	Toxic if inhaled or swallowed. If in eyes or on mucous membranes, it causes a stimulatory effect. May cause such symptoms as discomfort, nausea and headache through prolonged exposure.
Precautionary Statement	:	［Precaution］ A low risk in normal handling. Use appropriate personal protective equipment. Avoid release to the environment. When dust is generated, seal the source, and wear respiratory protection equipment. ［First Aid Measure］ If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.
［Storage］
Keep away from strong oxidizers.
Avoid direct sun light and stored at a clean, dry and well ventilated place at normal room temperature.
［Disposal］
Dispose of this reference material in accordance with applicable legislation and local government ordinance.
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 classifiable.

3. Composition/Information on Ingredients

Single substance/Mixture	:	Single
Chemical name	:	Graphite
Chemical Formula or Structural Formula	:	C
Amount	:	99.9 %
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : - Industrial Safety and Health Act : -
CAS No.	:	7782-42-5 (Graphite)

4. First-aid Measures

If in Eyes	:	Wash eyes with plenty of clean water. Seek medical attention, if necessary.
If on skin	:	Wash with a large amount of water and soap.
If Inhaled	:	Rinse mouth thoroughly with water. Seek medical attention, if necessary.
If Ingested	:	Rinse mouth thoroughly with water. Do not induce vomiting, if it is not the instructions from a doctor. Get medical advice/attention when feeling unwell.
Protecting Personnel in emergency measures	:	Wear protective equipment such as rubber gloves, eye protective goggles.

5. Fire-fighting Measures

Extinguishing Media	:	Water spray, Dry chemical extinguishing agent, Foam extinguishing agent, Carbon dioxide (CO_2)
Fire-Specific Hazards	:	In the case of fire, irritating or toxic gas (CO) may be generated.
Specific Fire-Fighting Method	:	Eliminate ignition sources at the origin of a fire and put out fire by using appropriate extinguishing media. It is necessary to

perform the appropriate action not to spill substances which have adverse influences, into the environment by water cannon, etc. for firefighting.

Protection of Fire-Fighters : Carry out fire-fighting from the windward in order to avoid breathing hazardous gas. Use personal protective equipment such as fire protection clothing, heat-resistant clothing, protective clothing, breathing apparatus, circulating oxygen respirator, rubber gloves, and rubber boots.

6. Accidental Release Measures

Personal Precaution : Remove ignition source in the vicinity immediately. Prepare fire-fighting equipment for the possibility of fires.

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 such as rubber gloves 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 scattered powder in empty containers using wet waste clothes or wiping clothes, and close the containers tightly. Then rinse them away 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 : Do not handle with bare hands.

Local and General Ventilation : When dust is generated, seal the source, and provide local exhaust ventilation or central ventilation.

Precautions for Safe Handling : Wear protective gloves when handling this reference material. Since this reference material is easy to be broken and if broken its fracture surface may cause incised wound.

Storage

Appropriate Storage Conditions : This RM should be kept at room temperature (23 °C ± 5 °C), at relative humidity (50% or less).

Safe Container Packaging Material : Polyethylene

8. Exposure Controls/Personal Protection

Threshold Limit Value

Not assigned

Permissible Concentration

・ACGIH　TLV-TWA	:	2 mg/m^3
・Values recommended by Japan Society for Occupational Health (2000)	:	Not assigned
・OSHA PEL TWA	:	Not assigned

Facility engineering

・Keep container tightly closed and avoid exposure to moisture.

・Install facilities to rinse eyes and to wash hands and body in the vicinity of a place handling this reference material and label them.

Personal Protective equipment

Respiratory protection	:	Protective dust mask, respiratory protection equipment.
Hands	:	Protective gloves
Eyes	:	Eye protector (Goggle type as necessary)
Skin and Body	:	Protective clothing, face mask
Hygiene measure	:	Treat in accordance with rules on Industrial hygiene and Industrial safety.

9. Physical and Chemical Properties

・Appearance, etc.	:	Solid This RM is distributed as a rectangular block with a base of 6 mm × 6 mm and a length of 10 mm for RM-1102 (Form 1) or a rectangular block with a base of 6 mm × 6 mm and a length of 20 mm for NMIJ RM-1102 (Form 2).
・Color	:	Glossy black
・Odor	:	No data
・pH	:	No data
・Melting point	:	3338 °C
・Boiling point	:	3700 to 4300 °C
・Flashing point	:	500 to 600 °C
・Explosive range	:	No data
・Vapor pressure	:	0.001 Pa (at 2000 °C)
・Relative vapor density(Air=1)	:	Powdered material is flammable; there is a possibility of dust explosion.
・Specific gravity or bulk specific gravity	:	About 1.5
・Solubility	:	No data
・*n*-Octanol/water partition coefficient (Log Po/w)	:	No data
・Auto-ignition temperature	:	No data
・Sublimation point	:	3652 °C

10. Stability and Reactivity

◇Stability

・Stable in normal conditions

◇Reactivity

・Reacts with fluorine at room temperature.

◇Conditions to Avoid

・Contact with oxidizing substances

◇Hazardous Decomposition Products

・Carbon monoxide (CO)

11. Toxicological Information

Note: The information about the toxicity related to this product has been investigated in the forefront of the way, but pay enough attention to the handling as those with an unknown toxic.

Acute Toxicity	Oral Mouse LD50: 440 mg/kg
Serious Eye Damage/ Eye Irritation	No-data
Carcinogenicity	No-data
Reproductive Toxicity	No-data
Teratogenicity	No-data
Specific target organ / systemic toxicity (repeated exposure)	No-data

12. Ecological Information

Persistence and Degradability

・No data available

Bioaccumulative Potential

・No data available

Ecotoxicity

・No data available

13. Disposal Considerations

・Dispose in accordance with applicable regional, national and local laws and regulations.

・Dispose of containers after thoroughly removing their contents.

14. Transport Information

UN Number	:	Not applicable
UN Classification	:	Not applicable
Shipping Name	:	Glass like carbon
Packing Group	:	-
ICAO/IATA	:	-
Marine Pollutant	:	Not applicable
Precautions	:	Transport this reference material carefully while keeping it away from

direct sunlight and humidity, and preventing accidental release due to falling, overturning, etc.

15. Regulatory Information

◇Industrial Safety and Health Act

- Article 57-2 (Enforcement Order: Article 18-2)　Hazardous substance whose name, etc. must be notified No. 130

◇Ship Safety Law

- Dangerous Material Rule article 3, Hazardous class 4.2 Flammable substances (container grade 2, 3)

◇Act on Port Regulations

- Ordinance for Enforcement of the Act on Port Regulations, Article 12: spontaneously combustible substances (except class III)

◇TSCA(Toxic Substances Control Act (a United States federal government law))

- Assigned

16. Other Information

Others

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.