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 : December 18, 2015
		Revised on : August 31, 2022
		ID Number : 5804002
Identity of Substance/Mixture	:	Certified reference material: NMIJ CRM 5804-b Isotropic Graphite for Thermal Diffusivity Measurement
Recommended Use of the Chemical and Restriction on Use	:	This certified reference material (CRM) is intended for use in the calibration or confirming the validity of instruments for thermal diffusivity measurements. 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	:	Not classified
GHS label element	:	Not classified
Signal Word	:	–
Hazards Statement	:	Not classified
Other Hazards Statement	:	Flammable Solid (Powder form) 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. ［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. If on skin: Rinse with water then get medical advice/attention. ［Storage］ Keep away from strong oxidizers.

This CRM should be stored in an environment with a temperature of 23 °C ± 5 °C and a relative humidity of 50% or less.

［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

Substance or mixture	:	Single
Chemical name	:	Graphite
Synonym	:	Black lead
Substance or mixture	:	99.99%
Chemical or structural formula	:	C
Molecular weight	:	288.26
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)
TSCA	:	Graphite
EINECS	:	231-955-3 (Graphite)
Hazadous substance	:	-

4. First-aid Measures

If in Eyes	:	Wash eyes with plenty of clean water for several minutes. Seek medical attention, if necessary.
If on skin	:	Rinse with plenty of clean water. Seek medical attention, if necessary.
If Inhaled	:	Remove victim to fresh air and keep at rest and warm. Get medical advice/attention.
If Ingested	:	Rinse mouth thoroughly with water and keep at rest. Seek medical attention, if necessary.
Expected Acute and Delayed Symptom	:	-
Most Critical Characteristic and Symptom	:	-
Protection of First-Aid Responder	:	Use personal protective equipment.

5. Fire-fighting Measures

Extinguishing Media	:	Water spray, Dry chemical extinguishing agent, Foam

		extinguishing agent, Carbon dioxide (CO_2)
Specific Fire-Fighting Method	:	Eliminate ignition sources at the origin of a fire and put out fire by using appropriate extinguishing media. Carry out fire-fighting from the windward as much as possible. Take appropriate precautions to prevent substances affecting the environment from leaking out when spraying water etc. to extinguish fire. Transfer the movable container to a safe place promptly. If impossible to transfer, use water spray to cool the periphery.
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.
Fire-Specific Hazards	:	Ignition temperature is 500 to 600 °C or more in the air. And it can cause a spontaneous ignition when it is in a large amount. It may cause a dust explosion when the powder is suspended above a certain amount in the air. Combustion product gas is generated. (CO, CO2)

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 self-contained breathing apparatus, rubber boots and heavy 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 the contaminated items in an empty container that can be sealed. If it is possible, use with wet waste clothes, wet wiping clothes to collect spillage. Then 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	:	Strict ban on fire. Keep away from hot surfaces and sparks. Do not allow contact with strong oxidizer.

Local and General Ventilation	:	In the case of handling in indoor workplaces, use local exhaust ventilation when dust when dust is generated.
Precautions for Safe Handling	:	Avoid rough handling such as turning over, dropping, giving a shock to or dragging containers. Prevent spill, overflow and scattering, and avoid 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. Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin and clothing. Do not bring gloves and other contaminated personal protective equipment into staff room. Make a place handling this reference material a restricted area to keep out unauthorized people.

Storage

Appropriate Storage Conditions	:	Avoid direct sun-light and store in clean and well ventilated place such as a desiccator at normal room temperature. This RM should be kept as closed state 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

No data

Permissible Concentration (Graphite)

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

Facility engineering

Ventilation/Exhaust	:	Use local ventilation system or general ventilation system when dust is generated.
Safety Control/ Gas Detection	:	Measuring equipment, Detecting tube
Storage Precaution	:	Ventilate along floor surface. Seal. Keep away from flammable substances, reducing agents and strong oxidizers.

Personal Protective equipment

Respiratory System	:	Dust mask
Hands	:	Protective gloves
Eyes	:	Eye protector (Goggle type as necessary)
Skin and Body	:	Protective clothing, Protective face mask

Hygiene Controls

Handle this reference material in accordance with industrial health and safety standards.

9. Physical and Chemical Properties

・Appearance, etc.	:	This CRM was in the form of disks with a diameter of 10 mm and thicknesses of 1.4 mm, 2.0 mm, 2.8 mm, and 4.0 mm; further, the CRM was stored in a plastic case.
・Color	:	Black
・Odor	:	No data
・pH	:	No data
・Melting point	:	3338 °C
・Boiling point	:	3700 °C～4300 °C
・Flashing point	:	No data. Flammable in a certain condition
・Explosive range	:	No data. Powdered material is flammable; there is a possibility of dust explosion.
・Vapor pressure	:	0.001 Pa (2000 °C)
・Relative vapor density(Air=1)	:	
・Specific gravity or bulk specific gravity	:	1.7 to 1.9
・Solubility	:	Insoluble in water
・*n*-Octanol/water partition coefficient (Log Po/w)	:	No data
・Auto-ignition temperature	:	No data. Ignition temperature is 500 to 600 °C or more in the air. And it can cause a spontaneous ignition when it is in a large amount. It may cause a dust explosion when the powder is suspended above a certain amount in the air. Flammable in a certain condition
・Electric conductivity	:	Electric conductive

10. Stability and Reactivity

◇Stability
- ・Stable in normal conditions

◇Reactivity
- ・Reacts with fluorine at room temperature.

◇Conditions to Avoid
- ・Contact with strong oxidizing substances

◇Hazardous Decomposition Products
- ・Carbon monoxide (CO)

11. Toxicological Information

Other

※ For the toxicity information, due to no information as a mixture, it is originated from the information about raw materials.

The present product is stable under the normal condition, and there is no hazard such as eluting any harmful additive agent ingredients; however, in case of special handling such as its use under higher temperature, sufficient measures for safety should be taken.

12. Ecological Information

Persistence and Degradability

・No data available

Bioaccumulative Potential

・No data available

Ecotoxicity

・No data available

13. Disposal Considerations

Residual Waste	:	Landfill disposal Dispose in accordance with applicable regional, national and local laws and regulations. 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	:	—
Shipping Name	:	—
Packing Group	:	—
ICAO/IATA	:	—
Marine Pollutant	:	Not applicable
Precautions	:	Check before transport if containers are free from leakage. Load in a way to avoid overturning, falling and being broken, and take all necessary measures to prevent collapsing

15. Regulatory Information

・No applicable legislations

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.