

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
 Emergency Contact : Same as above

Prepared on : January 15, 2024

ID Number : 5808002

Identity of Substance/Mixture : Certified reference material: NMIJ CRM 5808-b
 Recommended Use : Molybdenum Film for Thermal Diffusivity Measurement (400 nm)
 of the Chemical and : This CRM is intended for use in the calibration or confirmation of
 Restriction on Use : the validity of instruments for thermal diffusivity measurements.
 Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS classification : N/A
 GHS Label Element : Not assigned
 Signal Word : -
 Hazard and toxicity : -
 Precautionary Statement : [Precaution]
 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 or its fractions may scatter, care should be exercised not to drop etc. this reference material to protect it from excessive impact.
 [Action]
 If swallowed, drink a large amount of water to induce vomiting. Get medical advice/attention in case of abnormalities.
 [Storage]
 This CRM should be kept in a clean 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

Substance/Mixture	: Mixture
Chemical or Generic Name	: Molybdenum Film
Ingredient 1	: Quartz glass, Fused silica glass
CAS No.	: 7631-86-9
Content	: 99.9 % or over
Chemical Formula or Structural Formula	: SiO ₂
Molecular Weight	: 60.08
Reference Number in Gazetted List in Japan	: Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (1)-548 Industrial Safety and Health Act :-
Ingredient 2	: Molybdenum
CAS No.	: 7439-98-7
Content	: 0.1 % or less
Chemical Formula or Structural Formula	: Mo
Atomic weight	: 95.95
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 :-

4. First-aid Measures

If Inhaled	: Remove victim to fresh air and keep at rest. Get medical advice/attention.
If on Skin	: Remove contaminated clothes, shoes, and garment. Rinse away thoroughly with plenty of clean water. If developing some symptoms, seek medical advice as needed.
If in Eyes	: Rinse away thoroughly with clean water. 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	: This CRM causes a stimulatory effect in contact with eyes or mucous membranes.
Protecting Personnel in emergency measures	: Use personal protective equipment. In the normal handling, risk is low.

5. Fire-fighting Measures

- Extinguishing Media : This material is incombustible, use a fire extinguishing agent suitable for surrounding fire.
- Fire extinguishing agents that should not be used : N/A
- Specific Hazards : This CRM is nonflammable. But powdered material is flammable, there is a possibility of dust explosion. For powdered material may react with water liberating flammable or explosive gases.
- Specific extinguishing measure : Remove any combustible sources from the seat of fire and extinguish using appropriate extinguishing agent. 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.

6. Accidental Release Measures

- Personal Precaution : Remove ignition source in the vicinity immediately. Prepare fire-fighting equipment for the possibility of fires.
- Protective equipment and emergency procedure : 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 and close the containers tightly.
- 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 Precautions

- Handling Engineering Precautions (Local and General Ventilation) : Use local ventilation system in indoor handling area. Avoid rough handling such as turning over, dropping, giving a shock to or dragging containers. Prevent spill, overflow, and scattering, and avoid vapor generation.

	<p>Keep container tightly closed after using this reference material. Wash hands, face etc. thoroughly and gargle after handling this reference material.</p> <p>Do not bring gloves and other contaminated personal protective equipment into staff room.</p> <p>Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin, and clothing.</p>
Precautions for Safe Handling	:
Avoidance of Contact	: N/A
Hygiene Controls	: Handle in accordance with industrial hygiene and safety standards.
	<p>Do not eat, drink, or smoke except in designated areas. Wash hands and face thoroughly and gargle after handling. Do not bring gloves or other contaminated protective equipment into rest areas. Only authorized personnel should be allowed to enter the handling area. Wear appropriate protective equipment to prevent inhalation and contact with eyes, skin, and clothing.</p>
Storage	
Appropriate Storage Conditions	: This CRM should be stored in the sealed plastic bag at room temperature in a clean environment. Avoid direct sun light.
Safe Container	: Polypropylene wafer case
Packaging Material	

8. Exposure Controls/Personal Protection

Threshold Limit Value

- Not specified

Permissible Concentration (SiO₂)

- ACGIH TLV(s) : TWA 0.1 mg/m³
- Values recommended by Japan Society for Occupational Health : Not specified

Society for Occupational Health

- OSHA PEL : 8H TWA 10 mg/m³ (% resp SiO₂)

Permissible Concentration (Mo)

- ACGIH TLV(s) : TWA: 10 mg/m³ inhalable fraction
TWA: 3 mg/m³ respirable fraction

- Values recommended by Japan Society for Occupational Health : Not specified

Society for Occupational Health

- OSHA PEL : Not specified

Engineering Controls

- Ventilation/Exhaust : Local ventilation system or General ventilation system
- Safety Control/ Gas Detection : Measuring equipment, Detecting tube
- Storage Precaution : -

Personal Protective Equipment (PPE)

- Respiratory System : Gas mask for organic gases, Compressed air open-circuit self-contained breathing apparatus, if necessary.
- Hands : Protective gloves
- Eyes : Safety goggle
- Skin and Body : Protective clothing, Face protection
- Special Precautions : Handle this reference material in accordance with industrial health and safety standards.

9. Physical and Chemical Properties

- Physical state : Solid (round flakes)
- Color : Transparent and silver white
- Odor : No data
- Melting point/freezing point : No data
- Boiling point or initial boiling point and boiling range : No data
- Flammability : No data
- Lower and upper explosion limit/flammability limit : No data
- Flash point : No data
- Auto-ignition temperature : No data
- Decomposition temperature : No data
- pH : No data
- Kinematic viscosity : No data
- Solubility :
- Partition coefficient *n*-octanol/water (Log value) : No data
- Vapour pressure : No data
- Density and/or relative density :
- Relative vapour density :
- Particle characteristics :

10. Stability and Reactivity

- Reactivity : No data
- Chemical stability : Stable in normal conditions
- Possibility of hazardous reactions : No data
- Conditions to avoid : Sunlight, Heat, high humidity
- Incompatible materials : No data
- Hazardous decomposition products : No data

11. Toxicological Information

Acute Toxicity	:	Oral Rat LD50 3160 mg/kg (RTECS) Abdominal cavity Rat LDLo 50 mg/kg (RTECS) Intravenous Rat LD50 15 mg/kg Intratracheal Rat LDLo 10 mg/kg
Skin	:	No data available
Corrosion/Irritation		
Serious eye	:	No data available
Damage/Irritation		
Respiratory or Skin	:	No data available
Sensitization		
Germ Cell	:	No data available
Mutagenicity		
Carcinogenicity	:	IARC; group 3 (not specified for human Carcinogenicity)
Reproductive	:	No data available
Toxicity		
STOT-Single	:	No data available
Exposure		
STOT-Repeated	:	No data available
Exposure; and		
Aspiration Hazard	:	No data available

12. Ecological Information

Toxicity	:	No data available
Persistence and	:	No data available
Degradability		
Bioaccumulative Potential	:	No data available
Mobility in Soil	:	No data available
Other Adverse Effects	:	No data available

13. Disposal Considerations

Residual Waste	:	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	:	N/A
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UN Classification	:	N/A
Material name	:	-
Container grade	:	-
Marine pollutant	:	N/A
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
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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.
