

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

Prepared on : April 1, 2021

Revised on :

Reference No. : 5810001

Identity of substance/mixture : Certified Reference Material, NMIJ CRM 5810-a
Titanium Nitride Film for Thermal Diffusivity Measurement

Recommended use of the chemical and restriction on use : This reference material is intended for use in the calibration and validation of instruments for thermal diffusivity measurements based upon a pulsed light heating thermorefectance method.
Do not use this reference material for other purposes than testing/research.

2. Hazard Identification

GHS classification : Not classifiable

GHS-labeling element : —

Signal word : —

Hazard statement : —

Precautionary statement : [Precaution]

Low risk under conditions of normal handling. Use appropriate personal protective equipment when handling this reference material.

Wear protective gloves when handling this reference material.

Avoid rough handling such as dropping and giving a shock since this reference material is easy to be broken and if broken its fracture surface may cause incised wound or its fractions may scatter.

If swallowed: Give a large amount of water to induce vomiting. Get medical advice/attention if experiencing symptoms.

[Response]

When 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]

Protect from direct sun light and store in a sealed plastic bag. Store, as received, in a clean and well-ventilated place at temperature of 5 °C to 35 °C.

[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.

[Safety 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.

Other hazards information : If ingested, drink a large amount of water to induce vomiting. Get medical advice/attention in case of abnormalities.
This reference material is non-flammable. Low risk under conditions of normal handling.
Harmful if inhaled or swallowed.
In contact with eyes and mucous membranes: Causes irritation.
Causes damage to respiratory system if breathing dust for a long time.
May cause symptoms such as discomfort, nausea, and headache through prolonged exposure.

The other hazards than the above do not result in classification or are not classifiable

3. Composition/Information on Ingredients

Substance or mixture : Mixture

Ingredient 1

Chemical name : Titanium Nitride

Synonym : —

Chemical formula : TiN

Molecular weight : 61.87

CAS number : 25583-20-4

Content : Less than 0.1 %

Reference number in : Act on the Evaluation of Chemical Substances and Regulation of
gazetted list in Japan Their Manufacture, etc. : (1)-494
Industrial Safety and Health Act : Published

Ingredient 2

Chemical name : Silicon dioxide

Synonym : Quartz glass, fused silica

Chemical formula : SiO₂

Molecular weight : 60.08

CAS number : 60676-86-0
Content : 99.9 %
Reference number in : Act on the Evaluation of Chemical Substances and Regulation of
gazetted list in Japan Their Manufacture, etc. : (1)-548
Industrial Safety and Health Act : Published

4. First-Aid Measures

If inhaled : Remove victim to fresh air and keep at rest and warm. Get medical advice/attention.
If on skin : Rinse away thoroughly with plenty of clean water. Remove contaminated clothes, shoes, and garment. If experiencing some symptoms: Get medical advice/attention as needed.
If in eyes : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing. If eye irritation persists: Get medical advice/attention.
If swallowed : Rinse mouth thoroughly with water. Get medical advice/attention if there is any problem.
Protection of first-aiders : Use personal protective equipment.

5. Fire-Fighting Measures

Suitable extinguishing : This material is non-flammable. Use extinguishing media
media appropriate for surrounding fire.
Unsuitable extinguishing : No data available
media

6. Accidental Release Measures

Personal precautions, : Use appropriate personal protective equipment during the
personal protective operation to avoid skin contact of splash etc. and inhalation of
equipment and dust and gas.
emergency procedures Ventilate the affected areas thoroughly, if it is in an indoor environment, until the clean-up operation is completed.
Environmental : Take precautions to prevent spillages from draining into rivers
precautions 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 : Collect spillages in empty containers with vacuum cleaner and/or
neutralization broom.

7. Handling and Storage

Handling

Engineering precautions/Local and general ventilation	:	Take precautions to protect from sharp edge of this reference material. Do not handle with bare hands. Use tweezers or the like. Wear appropriate protective equipment. If gas or dust is emitted, install a local exhaust system.
Precautions for safe handling	:	Wear protective gloves to protect from sharp fracture surface when handling fractions of this reference material.
Hygiene controls	:	Handle this reference material in accordance with industrial health and safety codes. 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. Keep out unauthorized people. Use appropriate personal protective equipment to avoid inhalation and contact with eyes, skin, and clothing.
Storage		
Appropriate storage conditions	:	Protect from direct sun light. Store in a sealed plastic bag. Store, as received, in a clean and well-ventilated place at temperature of 5 °C to 35 °C.
Safe container packaging material	:	Polypropylene
※Refer to the Certificate for appropriate storage conditions and instructions for use as a reference material.		

8. Exposure Controls/Personal Protection

Threshold limit value	:	Not specified
Permissible concentration (Titanium nitride, TiO ₂)	:	Not specified
• ACGIH TLV-TWA	:	Not specified
• Values recommended by Japan Society for Occupational Health	:	Not specified
• OSHA PEL TWA	:	
Permissible concentration (Silicon dioxide, SiO ₂)	:	
• ACGIH TLV-TWA	:	TWA 0.1 mg/m ³
• Values recommended by Japan Society for Occupational Health	:	Not specified
• OSHA PEL TWA	:	8H TWA 10 mg/m ³ (% resp SiO ₂)
Engineering control	:	
• Ventilation/Exhaust	:	If dust is emitted: Seal the source and install a local ventilation system.

- Safety control/Gas detection : —
 - Storage precautions : —
- Personal protective equipment
- Respiratory system : Protective mask
 - Hands : Protective gloves
 - Eyes and face : Safety goggle, Face protection
 - Skin and body : Protective clothing

9. Physical and Chemical Properties and Safety Characteristics

As the dominant ingredient is silicon dioxide (SiO₂), the properties of silicon dioxide (SiO₂) are described.

Appearance, etc.	: Solid TiN thin film deposited on 10 mm x 10 mm square quartz plate with a thickness of 0.525 mm
Color	: Colorless and metallic luster black
Odor	: No data available
Melting point	: No data available
Boiling point	: No data available
Flammability	: Non-flammable
Explosive range	: Non-flammable
Flashing point	: Non-flammable
Auto-ignition temperature	: Non-flammable
pH	: Not applicable
Kinematic viscosity	: Not applicable
Solubility	: Insoluble in water and organic solvents.
<i>n</i> -Octanol/water partition coefficient (log Po/w)	: No data available
Vapor pressure	: No data available
Density and/or relative density	: No data available
Relative vapor density (air=1)	: No data available
Particle characteristics	: No data available

10. Stability and Reactivity

Reactivity	: No data available
Stability	: Stable under recommended storage conditions
Possibility of hazardous reactions	: No data available
Conditions to avoid	: No data available
Incompatible material	: No data available
Hazardous decomposition products	: No data available

11. Toxicological Information

Note: No information on toxicity is available. However, care should be taken when handling it as it may feature unknown toxicity.

※ Section “Toxicological Information” is prepared based on the information on the raw material because no information on the mixture is available.

This reference material is stable under normal conditions and there is no risk of elution of harmful additives. In case of handling this reference material under special conditions, such as high temperatures, however, it is recommended to take sufficient safety precautions.

12. Ecological Information

Ecotoxicity	: No data available
Persistence and degradability	: No data available
Bioaccumulative potential	: No data available
Mobility in soil	: No data available
Harmful effects on ozone layer	: No data available

13. Disposal Considerations

Residual wastes	: 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

International regulations

UN number	: Not applicable
Shipping name	: Not applicable
UN classification	: —
Packing group	: —
Marine pollutant	: —

Japanese domestic regulations

Transport by road/rail	: Comply with Fire Service Act, Poisonous and Deleterious Substances Control Act
Transport by sea	: Comply with Ship Safety Act and Act on Port Regulations

Transport by air : Comply with Civil Aeronautics Act

15. Regulatory Information

- No applicable laws and regulations
- © This SDS was originally prepared for the use of the reference material in Japan, and therefore Section 15 “Regulatory Information” covers only those laws and regulations which are enacted and enforced in Japan. In case of using this reference material, it is necessary to refer to and apply relevant laws and regulations of the country in which it is used.

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.
