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 : December 11, 2014
		Revised on : July 30, 2024
		ID Number : 5807001
Identity of Substance/Mixture	:	Certified Reference material NMIJ CRM 5807-a Al_2O_3-TiC, Ceramics for Thermal Diffusivity Measurement
Recommended Use of the Chemical and Restriction on Use	:	This reference material can be used for the calibration and validity evaluation of thermal diffusivity measurement instruments using flash method, etc. Do not use this reference material for other purposes than testing/research.

2. Hazards Identification

GHS classification	:	Classification not possible
GHS-labeling element	:	-
Signal word	:	-
Hazard and toxicity information	:	-
Hazards statement	:	As this reference material is solid state (ceramic plate), it is chemically stable. As the material has a risk of causing rough skin due to prolonged contact with fine particles / grinding fluid generated during processing (cutting / polishing), and also if fine particles scatter during processing, provide local exhaust ventilation and protective equipment to minimize the exposure to human bodies.
Precautionary statement	:	[Safety Measures] Use protective equipment for hands when handling. As it is easily damaged and there is a danger of cuts to the skin by the damaged surface and scattering of broken pieces, pay attention to prevent excessive impact by dropping, etc. [Emergency Measures] Ingestion: Drink plenty of water and vomit. If any abnormal state is identified, seek medical attention and treatment. If the person feels sick, seek medical attention and treatment.

[Storage]
Store at 23 °C ± 10 °C with a relative humidity of 50% or lower.
[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

Single substance or compound	:	Compound
Chemical name (1)	:	Aluminum oxide
Content	:	Approximately 70%
Chemical or structural formula	:	Al_2O_3
Molecular weight	:	101.96
Reference Number in Gazetted List in Japan	:	Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc. : (1)-23 Industrial Safety and Health Act : -
CAS No.	:	1344-28-1
Chemical name (2)	:	Titanium carbide
Content	:	Approximately 30%
Chemical or structural formula	:	TiC
Molecular weight	:	59.89
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.	:	12070-08-5

4. First-aid Measures

Eye contact	:	Wash eyes with plenty of clean water. Seek medical attention.
Skin contact	:	Wash thoroughly with clean water. In case of skin inflammation, seek medical attention.
Inhalation	:	Move to a place with fresh air. If symptoms persist, contact a physician.
Ingestion	:	Drink plenty of water and vomit. Contact a physician
Estimated acute and late symptom	:	-
Most important symptoms and effects	:	-

Protection of first-aiders	:	Use personal protective equipment. If handled normally, the risk is low.

5. Fire-fighting Measures

Extinguishing media	:	As this material is incombustible, use the extinguishing media suitable for peripheral fire.
Specific hazards with regard to fire-fighting	:	None
Specific methods of fire-fighting	:	Eliminate the origin of fire and put the fire out with extinguishing media. If possible, move containers to a safe place.
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, rubber boots, or other appropriate protective equipment.

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 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 area that might cause environmental damage. Prevent the polluted discharge from being drained into the environment without being processed properly.
Recovery and neutralization	:	Gather the scattered products and collect them in an empty container that can be sealed. Provide a remote place for fine particles released from grinding and processing and remove them by using a vacuum cleaner or other equipment that has a filter for efficiently collecting the minute particles. If appropriate removal methods are not available, dampen the fine particles with water mist or wet floor mop to remove them.
Prevention of secondary accidents	:	Clean up contaminated matter and places thoroughly, in accordance with the environmental regulations.

7. Handling and Storage

Handling

Technical measures	:	Avoid contact with acid materials. Avoid contact with strong base.
Local ventilation and	:	In case powdered dust is generated by processing work, etc., seal

general ventilation		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, overflow, or drift, and prevent powdered dust 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 should be 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 direct sunlight and store at 23 °C ± 10 °C with a relative humidity of 50% or lower.
Safe packaging materials	:	Plastic case
Incompatible materials	:	Strong acid, strong base

8. Exposure Controls/Personal Protection

Standard control concentration

N/A

Threshold limit values (material name) Aluminum oxide (powder)

・ACGIH TLV-TWA	:	1 mg/m^3 (respirable fraction)
・Value recommended by Japanese Society of Occupational Health	:	2 mg/m^3 OEL 5 mg/m^3 OEL
・OSHA PEL TWA	:	N/A

Threshold limit values (material name) Titanium carbide

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

Engineering controls (in case powdered dust is generated by processing work, etc.)

Ventilation and emission	:	Local ventilation equipment or general ventilation equipment
Safety management and gas detection	:	Measuring device, detection tube
Storage precautions	:	Ventilate along the floor surface and seal the container. Keep away from combustible/reducing materials and strong oxidants.

Protective equipment (in case powdered dust is generated by processing work, etc.)

Respiratory protection	:	Dust mask
Hand protection	:	Protective gloves
Eye protection	:	Safety goggle
Skin and body protection	:	Protective clothing, face shield

Hygiene measures

Handle in accordance with the industrial hygiene and safety standards.

9. Physical and Chemical Properties

・Appearance, etc.	:	Solid (disk-shaped test piece)
・Color	:	Black
・Odor	:	No data
・pH	:	No data
・Melting point	:	2030 °C (aluminum oxide), 3140 °C (titanium carbide)
・Boiling point	:	2980 °C (aluminum oxide), 4820 °C (titanium carbide)
・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	:	4.24
・Solubility	:	Barely soluble in water and acid
・*n*-Octanol/water partition coefficient (Log Po/w)	:	No data
・Auto-ignition temperature	:	No data

10. Stability and Reactivity

Stability	:	Stable under recommended storage conditions
Reactivity	:	No data available
Conditions to Avoid	:	Sunlight, heat, and contact with oxidant.
Incompatible materials	:	No data available
Hazardous Decomposition Products	:	No data available

11. Toxicological Information

No data

12. Ecological Information

Ecotoxicity	:	No data
Persistence and Degradability	:	No data

Bioaccumulative Potential	:	No data
Mobility in soil	:	No data
Influence to the ozone layer	:	No data

13. Disposal Considerations

Residues	:	Dispose as industrial waste. Dispose in accordance with related laws, regulations, and local regulations. If it is impossible to dispose by the procedures described above, use a waste-treatment vendor certified by prefectural governor.
Contaminated containers and packaging	:	To dispose of an empty container, completely remove the contents.

14. Transport Information

UN Dangerous Goods Number	:	Not applicable
UN classification	:	Not applicable
Product name	:	-
Packing group	:	-
ICAO/IATA	:	-
Marine pollutant	:	Not applicable
Matters to be attended to	:	Avoid direct sunlight. Prevent leakage and fires caused by shock or agitation to the container, and transport with caution.

15. Regulatory Information

No applicable laws and regulations

◎ **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

Other

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.