

SAFETY DATA SHEET

1. Chemical Product and Company Identification

ProductName Hf[N(CH₃)₂]₄ (tetrakis (dimethylamino) hafnium, TDMAHf, Code#:HFR07GB)

Reference NO. HFR10XAG-001

Creation Date 2025/11/17

Company information Name : Kojundo Chemical Laboratory Co.,Ltd.
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Product Use For research purposes

Restriction of use Seek expert judgment when using the product for applications other than those recommended

2. Hazards identification

[GHS CLASSIFICATION]

PHYSICAL HAZARDS

Substances and mixtures which, in : Category2
contact with water, emit
flammable gases

HEALTH HAZARDS

Skin corrosion/irritation : Category2

Serious eye damage/Eye Irritation : Category2

ENVIRONMENTAL HAZARDS

Not Classification criteria.

[GHS LABEL ELEMENTS]

Pictogram



Signal Word : Danger

Hazard Statement : In contact with water releases flammable gas(H261)
: Causes skin irritation(H315)
: Causes serious eye irritation(H319)

Precautionary Statement

Safety measures : Do not allow contact with water.(P223)
: Wash the competent authority to specify parts of the body to
be washed after handling. thoroughly after handling.(P264)
: Wear protective gloves/protective clothing/eye
protection/face protection.(P280)
: Handle under inert gas. Protect from moisture.(P231+P232)

First aid measures : Specific treatment.(P321)
: IF ON SKIN: Brush off loose particles from skin. Immerse in
cool water or wrap in wet bandages.(P302+P335+P334)
: IF ON SKIN: Wash with plenty of water(P302+P352)

- : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.(P305+P351+P338)
- : If skin irritation occurs: Get medical advice/attention. (P332+P313)
- : If eye irritation persists: Get medical advice/attention. (P337+P313)
- : Take off contaminated clothing and wash it before reuse. (P362+P364)
- : In case of fire: Use appropriate media to extinguish. (P370+P378)

Storage : Store in a dry place. Store in a closed container.(P402+P404)

Disposal : Dispose of contents/container in accordance with local/regional/national/international regulation.(P501)

3. Composition/information on ingredients

Classification of the substance or mixture : Substance

Chemical name	Concentration(%)	CAS RN®
Hf[N(CH ₃) ₂] ₄	100.00	19782-68-4

4. First aid measures

- Inhalation : Remove the exposed person immediately and provide fresh air. Get medical attention.
- Skin contact : Remove immediately all contaminated clothing. Wipe off the product immediately by tissue or soft cloth, etc. Promptly flush contaminated skin with soap or mild detergent and water. Contact physician if irritation continues.
- Eye contact : Rinse cautiously with water for 15 minutes.Get medical attention from an ophthalmologist. When washing your eyes, hold your eyelids open with your fingers to allow water to reach every corner of your eyeballs and eyelids.
- Ingestion : Rinse mouth and throat with water. Get medical attention immediately.
- Necessary precautions for protection of person performing first aid measures : Rescue workers wear appropriate eye and skin protection equipment according to the situation.
- Special precautions for doctors : The doctor should carry out treatment that corresponds to the patient's symptoms.

5. Fire fighting measures

- Suitable extinguishing media : Carbon dioxide, dry sand, dry chemical powder.
: Perlite, metal fire extinguishers
- Unsuitable extinguishing media : Straight discharge (water)
※ : Water, water foam
- Special hazards arising from the substance or mixture : Danger to generate irritating, corrosive and toxic gases during fire.
: Upon contact with water, it immediately undergoes hydrolysis to produce amines.
: Heating may cause an explosion.
: Reacts violently with water, liberating toxic, flammable gas.

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| Special fire fighting procedures | : Suffocate the fire with dry sand or similar materials. Remove containers to safe place if possible. Do not use water to extinguish the fire. |
| | : Depending on the situation, withdraw from area and let fire burn. |
| Special protective equipment and precautions for fire-fighters | : Wear appropriate respiratory air and the protective clothing (heat resistance). |

6. Accidental release measures

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| Personal precautions, protective equipment and emergency procedures | : Remove all ignition sources. |
| | : Workers should use protective wears to prevent contact with the spilt adhesive and inhalation of its vapor/dusts.
Indoor leakage: Ventilate as much as possible until the cleaning is completed.
Outdoor leakage: Work from the windward and evacuate the leeward crowd. |
| Enviromental precautions | : Prevent flow out to river, etc. so as not to badly affect. |
| Methods and material for containment and cleaning up | : Shut off leak if without risk.
Avoid unnecessary contacts with spills.
: Gather up, pack in closed DOT-approved waste container as much as possible.
Carefully collect remnant and move to a safe place. |
| Measures to prevent secondary disasters | : Prevent leakage into sewer, rivers and etc., and take measures to prevent environmental pollution. |

7. Handling and storage

Handling

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| Technical measures | : Handle the material in a dry inert gas atmosphere, utilizing glove bag or glove box.
Keep away from moisture and oxgen when handling.
Air and moisture sensitive. Light sensitive.
Keep away from heat, sparks and naked flame.
Electrically ground all equipment when handling this material and use only non-sparking tools. |
| Precautions for safe handling | : Air and moisture sensitive. Light sensitive.
Keep away from heat, sparks and naked flame.
Electrically ground all equipment when handling this material and use only non-sparking tools.
Make the electrical equipment explosion-proof. |
| Avoid contact | : Use protective wears and local ventilation equipment, if inhalation or skin contact is foreseen.
Avoid prolonged or repeated exposure. |
| Hygiene measures | : Do not eat, drink or smoke when using this product.
: Wash hands thoroughly after handling. |

Storage

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| Safe storage conditions | : Store the material in a sealed container.
Store in a cool, dry, well ventilated and dark place away from incompatible materials.
: Keep away from any heat, direct sunlight, sparks, and flames.
: Keep away from moisture and maintain the state before opening (such as storing in inert gas or in mineral oil).
: Store molded products such as targets in an unopened condition. |
| Safe container packaging materials | : No information available |

8. Exposure controls / Personal protection

Control parameters

Chemical name	ACGIH	OSHA
Hf[N(CH ₃) ₂] ₄	TWA:0.5mg/m ³ TWA:Hafnium [7440-58-6] and compounds, as Hf	TWA:0.5mg/m ³ TWA:as Hf

Equipment	: Install the appropriate general ventilation equipment, local exhaust ventilation in the workplace.
Personal protection	
Respiratory protection	: Wear appropriate NIOSH/MSHA-approved respirator such as gas mask with a filter (for ammonia). : Wear appropriate NIOSH/MSHA-approved respirator such as a gas mask with a filter (for organic gases).
Hand protection	: Wear appropriate NIOSH/MSHA-approved impervious gloves.
Eye and face protection	: Wear appropriate NIOSH/MSHA-approved safety goggles.
Skin and body protection	: Wear appropriate NIOSH/MSHA-approved impervious protective wear, protective boots.
Special precautions	: Regularly check your protective gear. : The notes for the table are as follows. D: Dust, M: Mist, F: Fumes, I: Inhalable particles, R: Respirable particles, IFV: Inhalable particles and vapors, T: Total dust, V: Vapors, C: Ceiling limit

9. Physical and chemical properties

Physical state	: Solid
Color	: White
Odour	: Ammonia odor
Melting point/Freezing point	: 28°C
Boiling point, initial boiling point and boiling range	: 34°C(13.3Pa)
Flammability	: Combustible
Range of explosion (lower bound - upper bound)	: No information available
Flash point	: No information available
Autoignition temperature	: No information available
Decomposition temperature	: No information available
pH	: No information available
Kinematic viscosity	: No information available
Solubility	: Decomposition(Soluble in toluene, hexane, and octane)
Partition coefficient (n-octanol/water)	: No information available
Vapor pressure	: 13.3Pa
Density/Specific gravity	: 1.48g/cm ³ (about 50°C)
Relative vapor density	: No information available
Particle characteristics	: No information available
Other	: F.W. : 354.8 Oxidizing : None

10. Stability and reactivity

Reactivity	: Decomposes by reacting with moisture in the atmosphere.
Chemical stability	: Stable in closed container under inert gas (at room temperature).
Possibility of hazardous reactions	: The mixture of vapor/air is explosive. There is a risk of fire or explosion due to contact with acid / oxidizing agents. : There is a risk of fire or explosion due to contact with acid, alcohol, oxidant, water.
Conditions to avoid	: Keep away from direct sunlight. Store in a cool, dark place. : High temperature, heat, ignition source. : Humidity, moisture.
Incompatible materials	: Water : Oxygen, oxidizing agents, acids
Hazardous decomposition products	: No information available

11. Toxicological information

Acute toxicity(oral)	No information available
Acute toxicity(dermal)	No information available
Acute toxicity(inhalation:gases)	No information available
Acute toxicity(inhalation:vapours)	No information available
Acute toxicity(inhalation:dusts and mists)	No information available
Skin corrosion/Skin irritation	Hf[N(CH ₃) ₂] ₄ : Category2
Serious eye damage/Eye Irritation	Hf[N(CH ₃) ₂] ₄ : Category2A
Respiratory sensitizer	No information available
Skin sensitizer	No information available
Germ cell mutagenicity	No information available
Carcinogenicity	No information available
Toxic to reproduction/Effects on or via lactation	No information available
Specific target organ toxicity(single exposure)	No information available
Specific target organ toxicity(repeated exposure)	No information available
Aspiration hazard	No information available

12. Ecological information

Hazard to the aquatic environment (acute)	No information available
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Hazard to the aquatic environment (chronic)

No information available

Hazardous to the ozone layer

No information available

Ecotoxicity/Fish toxicity

No information available

Ecotoxicity/ Invertebrate toxicity

No information available

Ecotoxicity/ Algal toxicity

No information available

Persistence and degradability

No information available

Bioaccumulative potential

No information available

Mobility in soil

No information available

13. Disposal considerations

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| Remained waste | : Discard in accordance with the standards of the local government and relevant legislation. |
| A polluted container and packing | : When disposing of empty containers, empty containers are processed in accordance with the standards of the local government as well as the related laws and regulations and waste disposal method after contents are completely removed. |

14. Transport information

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| UN number | : 2813 |
| Guideline Number | : 138 |
| Shipping name | : WATER-REACTIVE SOLID, N.O.S. |
| UN Class | : Class4 Flammable solids; substances liable to spontaneous combustion; substances which, on contact with water, emit flammable gases |
| Packing group | : III |
| Subsidiary risk(s) | : - |
| MARINE POLLUTANT | : Not applicable |
| Transport in bulk according to MARPOL 73/78,Annex II ,and the IBC code | : Not applicable |
| Special safety measures for transport or means of transport | : Follow "7. Handling and storage"
: Check no leak of container, handle without overturning, falling and damaging, then reliably prevent from cargo shift. |
| Domestic regulations | |
| Ground transport | : Follow the transportation method specified in the Fire Service Law and the Industrial Safety and Health Law. |
| Marine transport | : Follow the transportation method specified in the Ship Safety Law. |
| Air transport | : Follow the transportation method specified in the Aviation Law. |

15. Regulatory information

Follow relevant national and local regulations.

16. Other information

This " Safety Data Sheet(SDS)" is for provision of information, and it does not represent a guarantee the properties or safeties of the product.

Since not all materials and literature have been investigated, information may be omitted, and changes may occur in the content due to the discovery of new findings or corrections of previous theories.

The information contained herein is based on information in our possession, but we do not guarantee the completeness of the information.

It is subject to revision based on changes in laws and regulations and new findings.

When using this information for important decisions, we recommend that you carefully review the source of the information or verify it through testing.

Values of ingredients, content, physicochemical properties, etc., are not quality assurance values.

Prior to use, please investigate the laws and regulations of the organization, area and country where the product is to be used.

The information is intended to ordinary usage, in case of special handling, sufficient care should be taken.

※ We recommend not using fire extinguishing medias that are also listed as "Suitable extinguishing media".