福建沃尔法化学科技有限公司
Fujian Wolfa Chemical Technology Co., Ltd

DESIGN REPORT OF SAFETY DATA SHEET

Revision Date: Nov. 14, 2025

Name of the Sample	TETRAKIS(DIETHYLAMINO)HAFNIUM
Applicant	Fujian Wolfa Chemical Technology Co., Ltd.
Supplier	Fujian Wolfa Chemical Technology Co., Ltd.
Composition of the Sample	TETRAKIS(DIETHYLAMINO)HAFNIUM: ≥99%
Warranty of Design	Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Eleventh Revised Edition
Design Result of SDS please see next page.	

Notes:This SDS is valid before the implementation of the Twelfth revised edition GHS.

SAFETY DATA SHEET

SDS

Section 1 Product and Company Identification

> Product Identifier

Product Name	TETRAKIS(DIETHYLAMINO)HAFNIUM
Synonyms	——
CAS No.	19824-55-6
EC No.	——
Molecular Formula	$C_{16}H_{40}HfN_4$

> Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Relevant Identified Uses	Please consult manufacturer.
Uses Advised Against	Please consult manufacturer.

> Details of the Supplier of the Safety Data Sheet

Applicant Name	Fujian Wolfa Chemical Technology Co., Ltd
Application Address	Room 2620, Building 18, Xingguang Plaza, No.970 Anji South Road, Fengze District, Quanzhou City, Fujian Province
Applicant Post Code	362000
Applicant Telephone	+86 18050950397
Applicant Fax	——
Applicant E-mail	——
Supplier Name	Fujian Wolfa Chemical Technology Co., Ltd
Supplier Address	Room 2620, Building 18, Xingguang Plaza, No.970 Anji South Road, Fengze District, Quanzhou City, Fujian Province
Supplier Post Code	362000
Supplier Telephone	+86 18050950397
Supplier Fax	——
Supplier E-mail	——

> Emergency Phone Number

Emergency Phone Number	+86 18050950397

Section 2 Hazards Identification

Hazard class and label elements of the product according to GHS (the Eleventh revised edition):

> GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable liquids	Category 2
Substances and mixtures, which in contact with	Category 2

water, emit flammable gases	
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Specific Target Organ Toxicity – Single exposure	Category 3

> GHS Label Elements

Pictogram



Signal Word Danger

> Hazard Statements

H225	Highly flammable liquid and vapour.
H261	In contact with water releases flammable gas.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

> Precautionary Statements

Prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
P223	Keep away from any possible contact with water, because of violent reaction and possible flash fire.
P231+P232	Handle under inert gas. Protect from moisture.
P233	Keep container tightly closed.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/equipment.
P242	Use only non-sparking tools.
P243	Take precautionary measures against static discharge.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P264	Wash skin thouroughly after handling.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P303+P361+P353	IF ON SKIN (or hair): Remove/Take off Immediately all contaminated clothing. Rinse SKIN with water/shower.
P304+P340+P312	IF INHALED: Remove victim to fresh air and Keep at rest in a position

	comfortable for breathing.Call a POISON CENTER or doctor/physician if you feel unwell.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes.
P332+P313	IF SKIN irritation occurs: Get medical advice/attention.
P335+P334	Brush off loose particles from skin. Immerse in cool water/wrap in wet bandages.
P337+P313	IF eye irritation persists: Get medical advice/attention.
P370+P378	In case of fire: Use dry sand, dry chemical to extinguish.
Storage	
P402+P404	Store in a dry place. Store in a closed container.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.
Disposal	
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

Section 3 Composition/Information on Ingredients

Component	CAS No.	EC No.	Concentration (weight percent, %)
TETRAKIS(DIETHYLAMINO)HAFNIUM	19824-55-6	/	≥99

Section 4 First Aid Measures

> Description of First Aid Measures

General Advice	Please show this SDS to the doctor who arrives on the scene. Immediate medical attention is required.
Following eye contact	Immediately rinse with plenty of water for at least 15 minutes, including under the eyelids. If it enters the eyes, flush immediately with copious water and seek medical attention.
Following skin contact	Remove contaminated clothing. Immediately rinse with plenty of water for at least 15 minutes. Seek immediate medical attention.
If swallowed	Do not induce vomiting. Call a doctor or poison control center immediately. If vomiting occurs naturally, have the patient lean forward.
If inhalation	Move to fresh air. If breathing stops, perform artificial respiration. If the patient has ingested or inhaled the substance, do not use mouth-to-mouth resuscitation; instead, perform artificial respiration using a pocket mask with a one-way valve or another suitable respiratory medical device. Immediate medical attention is required. There is a risk of serious damage to the lungs.

> Most Important Symptoms and Effects, both Acute and Delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11.

> Indication of Any Immediate Medical Attention and Special Treatment Needed

No data available.

Section 5 Fire Fighting Measures

> Extinguishing Media

Suitable extinguishing media: Dry chemical powder pressurized with nitrogen, carbon dioxide.

For safety reasons unsuitable extinguishing agents: Avoid using water or foam.

> Specific Hazards Arising from the chemical

Carbon oxides.

Nitrogen oxides (NOx).

Hafnium oxide.

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

May not get in touch with: Water.

> Special protective actions for fire-fighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6 Accidental Release Measures

> Personal Precautions, Protective Equipment and Emergency Procedures

Use personal protective equipment as required. Ensure adequate ventilation. Avoid dust formation. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas.

> Environmental Precautions

Do not flush into surface water or sanitary sewer system. Should not be released into the environment. Do not allow material to contaminate ground water system.

> Methods and Materials for Containment and Cleaning Up

Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Do not flush with water.

Section 7 Handling and Storage

> Precautions for Handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

Keep away from sources of ignition - No smoking.Take measures to prevent the build up of electrostatic charge.

> Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Never allow product to get in contact with water during storage.

Section 8 Exposure Controls/Personal Protection

> Control Parameters

Biological Limit Values

No information available.

Occupational Exposure Limit

No information available.

> Engineering Controls

Ensure adequate ventilation, especially in confined areas.

Ensure that eyewash stations and safety showers are available in the work vicinity.

Use explosion-proof electrical, ventilating, and lighting equipment.

Set up emergency evacuation routes and necessary emergency discharge areas.

> Personal Protection Equipment

Eye protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, sprays or mists. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles, faceshield (8-inch minimum). Refer to 29 CFR 1910.133, ANSI Z87.1, or European Standard EN166.
Hand protection	Chemical-resistant, impervious gloves complying with an approved standard. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product.
Respiratory protection	When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. To protect the wearer, respiratory protective equipment must be the correct fit and be used and maintained properly.
Skin and body protection	Wear chemical-resistant protective clothing.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practice.
Environmental exposure controls	Prevent product from entering drains. Do not allow material to contaminate ground water system.

Section 9 Physical and Chemical Properties

Appearance	Light yellow liquid
Odor	No information available
Odor Threshold	No information available
pH	No information available
Melting Point/Freezing Point (℃)	-68℃
Initial Boiling Point and Boiling Range (℃)	130℃ @ 0.01 mmHg
Flash Point (℃)	10℃ – closed cup
Evaporation Rate	No information available
Flammability	No information available
Upper/lower explosive limits[%(v/v)]	Upper limit: No information available; Lower limit: No information available

Vapor Pressure (KPa)	No information available
Relative Vapour Density (Air=1)	No information available
Relative Density (Water=1)	1.249 g/cm³ @ 25℃ (lit).
Solubility	No information available
n-Octanol/Water Partition Coefficient	No information available
Auto-Ignition Temperature (℃)	No information available
Decomposition Temperature (℃)	No information available
Kinematic Viscosity (mm2/s)	No information available
Particle characteristics	No information available
Critical Temperature (℃)	No information available

Section 10 Stability and Reactivity

Reactivity	This product reacts with water and protic solvents to release a highly flammable gas.
Chemical Stability	Stable under recommended storage conditions.
Possibility of Hazardous Reactions	Violent reaction with water.
Conditions to Avoid	Heat, flames and sparks. Exposure to moisture.
Materials to avoid	Strong oxidizing agents, Water, Oxygen.
Hazardous decomposition products	In case of fire, decomposition may produce hazardous substances. Carbon oxides. Nitrogen oxides. Hafnium oxides.

Section 11 Toxicological Information

> Acute Toxicity

No information available.

> Skin Corrosion/Irritation

Causes skin irritation.

> Serious Eye Damage/Irritation

Causes serious eye irritation.

> Respiratory Sensitization

No information available.

> Skin Sensitization

No information available.

> Germ Cell Mutagenicity

No information available.

> Carcinogenicity

No information available.

> Reproductive Toxicity

No information available.

> STOT-single Exposure

May cause respiratory irritation.

> Aspiration Hazard

No information available.

Section 12 Ecological Information

> Acute aquatic Toxicity

No information available.

> Chronic aquatic toxicity

No information available.

> Other adverse effects

No information available.

> Others

Persistence and Degradability	No information available.
Bioaccumulative Potential	No information available.
Mobility in Soil	No information available.
Results of PBT and vPvB Assessment	No information available.

Section 13 Disposal Considerations

> Waste treatment methods

Waste Products	Waste is classified as hazardous. Dispose of in accordance with the European Directives on waste and hazardous waste. Dispose of in accordance with local regulations.
Contaminated Packaging	Dispose of this container to hazardous or special waste collection point. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep product and empty container away from heat and sources of ignition.
Other Information	Do not flush to sewer. Waste codes should be assigned by the user based on the application for which the product was used. Can be landfilled or incinerated, when in compliance with local regulations. Do not let this chemical enter the environment. Do not empty into drains.

Section 14 Transport Information

Transporting Label



Marine Pollutant	No
UN Number	3399

Proper Shipping Name	Organometallic substance, liquid, water reactive, flammable*
Hazard Class	4.3
Subsidiary Hazard Class	3
Packing Group	II

Section 15 Regulatory Information

Regulatory Information

Component	EINECS	TSCA	DSL	IECSC	NZIoC	PICCS	KECL	AIIC	ENCS
TETRAKIS(DIETHYLAMINO) HAFNIUM	×	×	×	×	×	×	×	×	×

【EINECS】	European Inventory of Existing Commercial Chemical Substances
【TSCA】	Toxic Substances Control Act Inventory (United States)
【DSL】	Domestic Substances List (Canada)
【IECSC】	Inventory of Existing Chemical Substances in China
【NZIoC】	New Zealand Inventory of Chemicals
【PICCS】	Philippines Inventory of Chemicals and Chemical Substances
【KECL】	Korean Existing Chemicals List
【AIIC】	Australian Inventory of Industrial Chemicals
【ENCS】	Existing and New Chemical Substances (Japan)

Note

“√” Indicates that the substance included in the regulations

“×” That no data or included in the regulations

Section 16 Additional Information

Preparation Date	Dec. 1, 2022
Revision Date	Nov. 14, 2025
Revision Reason	SDS Update Section

Disclaimer

The information provided in this Safety Data Sheet is correct based on the latest knowledge, information and concepts available to us. The information provided is intended only as a guide for safe operation, use, processing, storage, transportation, disposal and discharge and is not intended as a guarantee or specification of quality. This information is only used for the specific substance specified and may not be suitable for mixing with any other substance or in all cases, unless otherwise specified in the context.