


Hafnium Dinitrate Oxide Solution	Pricing >
Hafnium Oxynitrate Dihydrate	Pricing >

Linear Formula	HfO(NO ₃) ₂
Pubchem CID	N/A
MDL Number	MFCD00798524
EC No.	N/A
IUPAC Name	oxohafnium(2+); dinitrate
SMILES	[N+](=O)([O-])[O-].[N+](=O)([O-])[O-].O.O.O=[Hf+2]
InchI Identifier	InChI=1S/Hf.2NO3.2H2O.O/c;2*2-1(3)4;;;h;;;2*1H2;/q+2;2*-1;;;
InchI Key	DCDJKLZDRCSWET-UHFFFAOYSA-N
Signal Word	N/A
Hazard Statements	H315-H319
Hazard Codes	Xi
Precautionary Statements	P264-P280-P302+P352-P305+P351+P338-P332+P313-P362
Risk Codes	N/A
Safety Statements	N/A
Transport Information	UN 3218 5.1/PG III
GHS Pictograms	GHS07 Exclamation Point 

[Create Printable PDF](#)

SAFETY DATA SHEET

Date Accessed: 04/25/2024

Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Identifiers: All applicable American Elements product codes for CAS #15060-56-7

Relevant identified uses of the substance:
Scientific research and development

Supplier details:
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024

Tel: +1 310-208-0551
Fax: +1 310-208-0351

Emergency telephone number:
Domestic, North America +1 800-424-9300
International +1 703-527-3887

SECTION 2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Acute toxicity - Oral Category 4

Skin corrosion/irritation Category 1B

Serious eye damage/eye irritation Category 1

Oxidizing solids Category 2

Label elements

Emergency Overview

Signal Word:

Danger

Hazard statements:

H272: May intensify fire; oxidizer

Causes severe skin burns and eye damage

H314: Causes serious eye damage

H302: Harmful if swallowed



Appearance: Powder

Physical state: Powder

Odor: Pungent, Slight nitric

Precautionary Statements - Prevention

P280: Wear protective gloves/protective clothing/eye protection/face protection

P260: Do not breathe dust/gas/mist

P270: Do not eat, drink or smoke when using this product

P264: Wash hands thoroughly after handling

P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking

P220: Store away from flammable substances, reducing agents, metal powders, and organic materials.

Precautionary Statements - Response

P301+330+331+P310: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician

P303+P335+P361+P353: IF ON SKIN (or hair): Brush off loose particles from skin, Remove/Take off immediately all contaminated clothing, Rinse skin with water/shower

P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P363: Wash contaminated clothing before reuse
P370+378: In case of fire: Use media appropriate for class of fire for extinction.
Precautionary Statements - Storage
P402: Store in a dry place
Precautionary Statements - Disposal
P501: Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
N/A
Other Information
N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Hafnium Nitrate Oxide, Hafnium Nitrate Hydroxide, Hafnium Binitrate Dihydroxide, Hafnium Nitrate (Product #416).
Chemical Name CAS No. Weight-%
Hafnium Dinitrate Oxide 15060-56-7 >99%

SECTION 4. FIRST AID MEASURES

First aid measures
Eye contact Flush with water for 15 minutes. See a physician.
Skin Contact Brush off loose particles from skin. Remove/Take off immediately all contaminated clothing.
Rinse skin with water/shower.
Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control center immediately.
Ingestion Do NOT induce vomiting. Have patient drink large quantities of water if able. Call Physician immediately for further instructions.
Most important symptoms and effects, both acute and delayed
Symptoms May cause acute gastrointestinal effects if swallowed. Contact with moist skin may cause skin burns. May cause breathing difficulties if inhaled.
Indication of any immediate medical attention and special treatment needed

Note to physicians Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media

Material is a strong oxidizer but is itself not flammable.

Select extinguishing media appropriate for class of fire.

Unsuitable extinguishing media: None.

Specific hazards arising from the chemical

This is a strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.

Hazardous combustion products: Nitrogen oxide gases may cause respiratory and/or eye irritation.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) respirator and full protective gear.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions Use personal protective equipment as required.

For emergency responders Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 140.

Environmental precautions

Environmental precautions Collect spillage to prevent release to the environment.

Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Sweep or shovel material into dry containers. Avoid creating uncontrolled dust.

Sweep or

shovel material into dry containers. Avoid creating uncontrolled dust. Wash the spill location thoroughly with water. Respiratory protection may be needed. Skin and eye protection should be used during cleanup.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling Protect from moisture:

Reacts with water. Ensure adequate ventilation, especially in confined areas.

Conditions for safe storage, including any incompatibilities Conditions Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric

motors and static electricity). Store away from flammable substances, reducing agents, metal powders, and organic materials.

Incompatible materials Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics.

Flammable

substances, reducing agents, metal powders, and organic materials. Reacts with metals to produce heat and corrosive gases.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name ACGIH TLV OSHA PEL

Hafnium Dinitrate Oxide

15060-56-7

- - Appropriate engineering controls

Engineering Controls Avoid generation of uncontrolled particles.

Individual protection measures, such as personal protective equipment

Eye/face protection If a risk of eye injury or irritation is present, appropriate eye protection is recommended; for

example, tight-fitting goggles, foam-lined safety glasses, face shield, or other protective equipment that shields the eyes.

Skin and body protection Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls,

as appropriate, to prevent skin contact.

Respiratory protection When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn.

Positive-pressure supplied air respirators may be required for high airborne contaminat concentrations. Respiratory protection must be provided in accordance with current local

regulations.

General Hygiene Considerations Handle in accordance with good industrial hygiene and safety practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state - Powder

Appearance - Powder

Color - white

Odor Pungent, Slight nitric

pH - <1

Melting point/freezing point - Boiling point / boiling range - Flash point - N/A

Evaporation rate - N/A

Flammability (solid, gas) - Not flammable

Flammability Limit in Air

Upper flammability limit: -

Lower flammability limit: -

Vapor pressure - N/A

Vapor density - N/A

Specific Gravity 1.7

Water solubility Soluble in water

Solubility in other solvents - Partition coefficient -

Autoignition temperature - N/A

Decomposition temperature - N/A

Kinematic viscosity - N/A

Dynamic viscosity - N/A

Explosive properties N/A

Oxidizing properties Strong oxidizer and will react vigorously or explosively with many materials including

organic materials, such as wood and paper, and flammable metals.

Other Information

Softening point -

Molecular weight -

VOC Content (%) N/A

Density

Bulk density 48 lb/ft³

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Reacts with water. Strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals

Chemical stability
Stable under recommended storage conditions.
Possibility of Hazardous Reactions
Reacts with water.
Hazardous polymerization Hazardous polymerization
does not occur.
Conditions to avoid
Unintentional contact with water. Heat. Static
discharge.
Incompatible materials
Water, alcohols, phenols, and amines. Rubber,
coatings, and some plastics. Flammable substances,
reducing agents, metal
powders, and organic materials. Reacts with metals to
produce heat and corrosive gases.
Hazardous Decomposition Products
Reacts with water to produce nitric acid and heat

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure
Product Information
Inhalation Product not classified.
Eye contact Causes severe eye damage.
Skin Contact Causes severe skin burns.
Ingestion Harmful if swallowed.
Chemical Name
Hafnium Dinitrate Oxide
CAS 15060-56-7
Oral LD50: > 300 and < 2000 mg/kg bw
Dermal LD50 -
Inhalation LC50 -
Information on toxicological effects
Symptoms May cause skin burns. May cause burning
sensation or redness in the eyes. May cause
acute gastrointestinal effects if swallowed.
Delayed and immediate effects as well as chronic
effects from short and long-term exposure
Acute toxicity Harmful if swallowed.
Skin corrosion/irritation May cause severe skin burns.
Serious eye damage/eye irritation May cause serious
eye damage.
Sensitization Product not classified.
Germ cell mutagenicity Product not classified.
Carcinogenicity Product not classified.
Reproductive toxicity Product not classified.
STOT - single exposure Product not classified.
STOT - repeated exposure Product not classified.
Aspiration hazard Product not classified.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

This product as shipped is not classified for aquatic toxicity.

Chemical Name Algae/aquatic plants Fish Toxicity to microorganisms

Crustacea

Hafnium Dinitrate Oxide

15060-56-7

The 72 h EC50 of zirconium dichloride oxide to

Pseudokirchnerella

subcapitata was 80% v/v

saturated solution.

The 96 h LL50 of zirconium dinitrate oxide to

Oncorhynchus mykiss was

greater than 100 mg/L.

- The 48 h EC50 of zirconium

dioxide to Daphnia magna

was greater than 100 mg/L.

Persistence and degradability

.Bioaccumulation

Other adverse effects

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. TRANSPORT INFORMATION

DOT Regulated

UN/ID No. 3085

Proper shipping name Oxidizing Solid, Corrosive, n.o.s. (Hafnium Oxynitrate)

Hazard Class 5.1

Subsidiary class 8

Packing Group II

Special Provisions 62, IB8, IP3, T1, TP33

Emergency Response Guide Number 140

SECTION 15. REGULATORY INFORMATION

International Inventories

TSCA Not Listed

DSL/NDSL Not Listed

EINECS/ELINCS Not Listed

ENCS Not Listed

IECSC Not Listed

KECL Not Listed

PICCS Not Listed

AICS Not Listed

Legend:

TSCA - United States Toxic Substances Control Act
Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances
List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing
Chemical Substances/European List of Notified
Chemical Substances

ENCS - Japan Existing and New Chemical
Substances

IECSC - China Inventory of Existing Chemical
Substances

KECL - Korean Existing and Evaluated Chemical
Substances

PICCS - Philippines Inventory of Chemicals and
Chemical Substances

AICS - Australian Inventory of Chemical Substances
US Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments
and Reauthorization Act of 1986 (SARA). This product
does not contain any

chemicals which are subject to the reporting
requirements of the Act and Title 40 of the Code of
Federal Regulations, Part 372

SARA 311/312 Hazard Categories

Acute health hazard Yes

Chronic Health Hazard No

Fire hazard No

Sudden release of pressure hazard No

Reactive Hazard Yes

CWA (Clean Water Act)

This product does not contain any substances
regulated as pollutants pursuant to the Clean Water
Act (40 CFR 122.21 and 40

CFR 122.42)

CERCLA

This material, as supplied, does not contain any
substances regulated as hazardous substances under
the Comprehensive
Environmental Response Compensation and Liability

Act (CERCLA) (40 CFR 302) or the Superfund
Amendments and
Reauthorization Act (SARA) (40 CFR 355). There
may be specific reporting requirements at the local,
regional, or state level
pertaining to releases of this material
US State Regulations
California Proposition 65
This product does not contain any Proposition 65
chemicals
U.S. State Right-to-Know Regulations
U.S. EPA Label Information
EPA Pesticide Registration Number Not Applicable

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No.
1907/2006 (REACH). The above information is
believed to be correct but does not purport to be all
inclusive and shall be used only as a guide. The
information in this document is based on the present
state of our knowledge and is applicable to the
product with regard to appropriate safety precautions.
It does not represent any guarantee of the properties
of the product. American Elements shall not be held
liable for any damage resulting from handling or from
contact with the above product. See reverse side of
invoice or packing slip for additional terms and
conditions of sale. COPYRIGHT 1997-2022
AMERICAN ELEMENTS. LICENSED GRANTED TO
MAKE UNLIMITED PAPER COPIES FOR INTERNAL
USE ONLY.
