



SAFETY DATA SHEET

Issue Date 16-Feb-2017

Revision Date 16-Feb-2017

Version 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Hafnium Oxynitrate

Other means of identification

Product Code SAC043

UN/ID No. 3085

Synonyms Hafnium Nitrate Oxide, Hafnium Nitrate Hydroxide, Hafnium Binitrate Dihydroxide, Hafnium Nitrate (Product #416)

Recommended use of the chemical and restrictions on use

Recommended Use Hafnium compounds.

Uses advised against

Details of the supplier of the safety data sheet

Manufacturer Address

ATI, 1000 Six PPG Place, Pittsburgh, PA
15222 USA

Emergency telephone number

Emergency Telephone Chemtrec: 1-800-424-9300

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

Danger

Hazard statements

May intensify fire; oxidizer

Causes severe skin burns and eye damage

Causes serious eye damage

Harmful if swallowed



Appearance Powder	Physical state Powder	Odor Pungent, Slight nitric
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Precautionary Statements - Prevention

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

Do not breathe dust/gas/mist

Do not eat, drink or smoke when using this product

Wash hands thoroughly after handling

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

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

Precautionary Statements - Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician

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

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Wash contaminated clothing before reuse

In case of fire: Use media appropriate for class of fire for extinction.

Precautionary Statements - Storage

Store in a dry place

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

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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

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.

5. FIRE-FIGHTING 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.

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.

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

Storage 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.

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 contaminant 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.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Powder	Odor	Pungent, Slight nitric
Appearance	Powder	Odor threshold	
Color	white		
<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>	
pH	<1		
Melting point/freezing point	-		
Boiling point / boiling range	-		
Flash point	-	Not applicable	
Evaporation rate	-	Not applicable	
Flammability (solid, gas)	-	Not flammable	
Flammability Limit in Air			
Upper flammability limit:	-		
Lower flammability limit:	-		
Vapor pressure	-	Not applicable	
Vapor density	-	Not applicable	
Specific Gravity	1.7		
Water solubility	Soluble in water		
Solubility in other solvents	-		
Partition coefficient	-		
Autoignition temperature	-	Not applicable	
Decomposition temperature	-	Not applicable	
Kinematic viscosity	-	Not applicable	
Dynamic viscosity	-	Not applicable	
Explosive properties	Not applicable		
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 (%)	Not applicable
Density	-
Bulk density	48 lb/ft ³

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.

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	Oral LD50	Dermal LD50	Inhalation LC50
Hafnium Dinitrate Oxide 15060-56-7	> 300 and < 2000 mg/kg bw	-	-

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.

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

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.

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

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

NFPA	Health hazards 1	Flammability 1	Instability 1	Physical and Chemical Properties -
HMIS	Health hazards 2*	Flammability 2	Physical hazards 2	Personal protection X
<i>Chronic Hazard Star Legend</i>	<i>* = Chronic Health Hazard</i>			

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Revision Note

Updated to comply with GHS

Note:

The information provided in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

Additional information available from: Safety data sheets and labels available at ATImetals.com