



# SAFETY DATA SHEET

Issue Date 08-Dec-2017

Revision Date 19-May-2020

Version 2

## Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

### 1.1. Product identifier

**Product Code** SAC039  
**Product Name** Hafnium Oxychloride Powder

**UN/ID no** 3260  
**Synonyms** Hafnium Oxychloride Powder; Hafnium Chloride Oxide Powder, Hafnium Dichloride Oxide Powder, Hafnium Dichloride Monoxide Powder, (Product #413)

### 1.2. Relevant identified uses of the substance or mixture and uses advised against

**Recommended Use** Chemical intermediate

**Uses advised against**

### 1.3. Details of the supplier of the safety data sheet

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

### 1.4. Emergency telephone number

**Emergency Telephone** Chemtrec: +1-703-741-5970

## Section 2: HAZARDS IDENTIFICATION

This material is classified per Regulation (EC) No 1272/2008.

### 2.1. Classification of the substance or mixture Regulation (EC) No 1272/2008

Skin corrosion/irritation	Category 1B
Serious eye damage/eye irritation	Category 1
May be corrosive to metals	Category 1

### 2.2. Label elements

#### Emergency Overview

**Danger**

#### Hazard statements

H290 - May be corrosive to metals  
H314 - Causes severe skin burns and eye damage  
H318 - Causes serious eye damage



**Appearance** crystalline Powder**Physical state** Solid**Odour** Pungent, Slight chlorine**Precautionary Statements - Prevention**

Do not breathe dust/fume

Wear protective gloves/protective clothing/eye protection

**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

Absorb spillage to prevent material damage.

**Precautionary Statements - Storage**

Store in a dry place

Store in corrosive resistant container

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**2.3 Hazards not otherwise classified (HNOC)**

Reacts violently with water

(EUH014)

**Other Information**

Harmful if swallowed

**Section 3: COMPOSITION/INFORMATION ON INGREDIENTS****3.1 Substances****Synonyms**

Hafnium Oxychloride Powder: Hafnium Chloride Oxide Powder, Hafnium Dichloride Oxide Powder, Hafnium Dichloride Monoxide Powder, (Product #413).

Chemical Name	EC No	CAS No	Weight-%
Hafnium Dichloride Oxide	237-345-3	13759-17-6	97->99
Zirconium Dichloride Oxide	231-717-9	7699-43-6	0 - 3

**Section 4: FIRST AID MEASURES****4.1. Description of first aid measures****Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor or poison control centre immediately.

**Skin Contact**

Brush off loose particles from skin. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

**Eye contact**

Flush with water for 15 minutes. See a physician.

**Ingestion**

Do NOT induce vomiting. Have patient drink large quantities of water if able. Call Physician immediately for further instructions.

**4.2. 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.

#### **4.3. Indication of any immediate medical attention and special treatment needed**

**Note to doctors** Treat symptomatically.

### **Section 5: FIREFIGHTING MEASURES**

#### **5.1. Extinguishing media**

##### **Suitable extinguishing media**

Non-combustible.

##### **Unsuitable extinguishing media**

Non-combustible. If a fire occurs in the area, avoid water contact with the product to prevent evolution of hazardous gases

#### **5.2. Special hazards arising from the substance or mixture**

Non-combustible

**Hazardous combustion products** Hydrogen chloride gas may cause respiratory and/or eye irritation.

#### **5.3. Advice for firefighters**

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

### **Section 6: ACCIDENTAL RELEASE MEASURES**

#### **6.1. 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. 154.

#### **6.2. Environmental precautions**

Collect spillage to prevent release to the environment.

#### **6.3. 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. Wash the spill location thoroughly with water. Respiratory protection may be needed. Skin and eye protection should be used during cleanup.

#### **6.4. Reference to other sections**

See Section 12: ECOLOGICAL INFORMATION.

### **Section 7: HANDLING AND STORAGE**

#### **7.1. Precautions for safe handling**

##### **Advice on safe handling**

Handle in accordance with good industrial hygiene and safety practice. Protect from moisture; Reacts with water. Ensure adequate ventilation, especially in confined areas. Handle under inert gas such as nitrogen or argon to maintain the integrity of the product.

##### **General Hygiene Considerations**

Handle in accordance with good industrial hygiene and safety practice.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Storage Conditions

Keep in corrosion resistant containers. Keep in properly labelled containers. Keep in a dry, cool and well-ventilated place. Protect from direct sunlight. Containers may become pressurized: Handle and open container with care.

#### Incompatible materials

Reacts with metals to produce heat and corrosive gases. Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics.

### 7.3. Specific end use(s)

#### Risk Management Methods (RMM)

The information required is contained in this Safety Data Sheet.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

Chemical Name	European Union	United Kingdom	France	Spain	Germany
Hafnium Dichloride Oxide 13759-17-6	-	-	-	-	-
Zirconium Dichloride Oxide 7699-43-6	-	TWA: 5 mg/m <sup>3</sup>	-	STEL: 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	-
Chemical Name	Italy	Portugal	Netherlands	Finland	Denmark
Hafnium Dichloride Oxide 13759-17-6	-	-	-	-	-
Zirconium Dichloride Oxide 7699-43-6	-	STEL: 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	-	TWA: 1 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup>
Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Hafnium Dichloride Oxide 13759-17-6	-	-	-	-	-
Zirconium Dichloride Oxide 7699-43-6	TWA: 5 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup>	STEL: 10 mg/m <sup>3</sup> TWA: 5 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup> STEL: 5 mg/m <sup>3</sup>	TWA: 5 mg/m <sup>3</sup> STEL: 10 mg/m <sup>3</sup>

**Derived No Effect Level (DNEL)** No DNELs are available for this product

**Predicted No Effect Concentration (PNEC)** No PNECs are available for this product.

### 8.2. Exposure controls

#### Engineering Controls

Avoid generation of uncontrolled particles. Local exhaust ventilation during processing is recommended.

#### 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 contaminate concentrations. Respiratory protection must be provided in accordance with current local regulations.

**Environmental exposure controls** Section 6: ACCIDENTAL RELEASE MEASURES.

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

**9.1. Information on basic physical and chemical properties**

<b>Physical state</b>	Solid		
<b>Appearance</b>	crystalline Powder	<b>Odour</b>	Pungent, Slight chlorine
<b>Colour</b>	white	<b>Odour threshold</b>	-
<b>Property</b>	<b>Values</b>	<b>Remarks • Method</b>	
pH	<1		
Melting point / freezing point	- °C / - °F		
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			-
Vapour pressure	-		Not applicable
Vapour density	-		Not applicable
Specific Gravity	2.2		
Water solubility	1080 g/L		
Solubility(ies)			
Partition coefficient	-		
Autoignition temperature	-		Not applicable
Decomposition temperature	200°C/392°F		
Kinematic viscosity	-		Not applicable
Dynamic viscosity	-		Not applicable
Explosive properties	Not applicable		
Oxidising properties	Not applicable		

**9.2. Other information**

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	50-60 lb/ft <sup>3</sup>

**Section 10: STABILITY AND REACTIVITY****10.1. Reactivity**

Reacts with water .

**10.2. Chemical stability**

Stable under normal conditions.

Explosion data

Sensitivity to Mechanical Impact None.  
Sensitivity to Static Discharge None.

**10.3. Possibility of hazardous reactions****Hazardous polymerisation**

Hazardous polymerisation does not occur.

**Possibility of Hazardous Reactions**

Reacts with water.

**10.4. Conditions to avoid**

Dust formation and dust accumulation. Unintentional contact with water.

**10.5. Incompatible materials**

Reacts with metals to produce heat and corrosive gases. Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics.

#### 10.6. Hazardous decomposition products

Reacts with water to produce hydrogen chloride gas or hydrochloric acid and heat.

### Section 11: TOXICOLOGICAL INFORMATION

#### 11.1. Information on toxicological effects

##### Product Information

<b>Inhalation</b>	Product not classified.
<b>Eye contact</b>	Causes severe eye damage.
<b>Skin Contact</b>	Causes severe skin burns.
<b>Ingestion</b>	Harmful if swallowed.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Hafnium Dichloride Oxide	3500 mg/kg bw	-	-
Zirconium Dichloride Oxide	3500 mg/kg bw	-	-

#### Information on toxicological effects

**Symptoms** May cause skin burns. May cause burning sensation or redness in the eyes. May cause severe upper respiratory irritation if inhaled. May cause acute gastrointestinal effects if swallowed.

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

<b>Acute toxicity</b>	Harmful if swallowed.
<b>Skin corrosion/irritation</b>	Causes severe skin burns.
<b>Serious eye damage/eye irritation</b>	Causes severe eye damage.
<b>Sensitisation</b>	Product not classified.
<b>Germ cell mutagenicity</b>	Product not classified.
<b>Carcinogenicity</b>	Product not classified.
<b>Reproductive toxicity</b>	Product not classified.
<b>STOT - single exposure</b>	Product not classified.
<b>STOT - repeated exposure</b>	Product not classified.
<b>Aspiration hazard</b>	Product not classified.

### Section 12: ECOLOGICAL INFORMATION

#### 12.1. Toxicity

This product as shipped is not classified for aquatic toxicity

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Hafnium Dichloride Oxide	-	-	-	-
Zirconium Dichloride Oxide	The 72 h EC50 of	The 96 h LC50 of	The 3 h EC50 of	The 48 h EC50 of

	zirconium dichloride oxide to Pseudokirchnerella subcapitata was 80% v/v saturated solution.	zirconium dioxide to Danio rerio was greater than 100 mg/L.	anhydrous zirconium acetate for activated sludge was greater than 1000 mg/L.	zirconium dichloride oxide to Daphnia magna was greater than 100% v/v saturated solution.
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**12.2. Persistence and degradability**

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**12.3. Bioaccumulative potential**

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**12.4. Mobility in soil****12.5. Results of PBT and vPvB assessment**

The PBT and vPvB criteria do not apply to inorganic substances.

**12.6. Other adverse effects**

## Section 13: DISPOSAL CONSIDERATIONS

**13.1. Waste treatment methods****Waste from residues/unused products**

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

**IMDG**

<b>14.1 UN/ID no</b>	3260
<b>14.2 Proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s. (Hafnium Oxychloride)
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing Group</b>	II
<b>14.5 Marine pollutant</b>	Not applicable
<b>14.6 Special Provisions</b>	IB8, IP2, IP4, T3, TP33
<b>14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code</b>	Not applicable

**RID**

<b>14.1 UN/ID no</b>	3260
<b>14.2 Proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s. (Hafnium Oxychloride)
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing Group</b>	II
<b>14.5 Environmental hazard</b>	Not applicable
<b>14.6 Special Provisions</b>	IB8, IP2, IP4, T3, TP33

**ADR**

<b>14.1 UN/ID no</b>	3260
<b>14.2 Proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s. (Hafnium Oxychloride)
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing Group</b>	II
<b>14.5 Environmental hazard</b>	Not applicable
<b>14.6 Special Provisions</b>	IB8, IP2, IP4, T3, TP33

**ICAO (air)**

<b>14.1 UN/ID no</b>	3260
<b>14.2 Proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s. (Hafnium Oxychloride)
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing Group</b>	II
<b>14.5 Environmental hazard</b>	Not applicable
<b>14.6 Special Provisions</b>	IB8, IP2, IP4, T3, TP33

**IATA**

<b>14.1 UN/ID no</b>	3260
<b>14.2 Proper shipping name</b>	Corrosive solid, acidic, inorganic, n.o.s. (Hafnium Oxychloride)
<b>14.3 Hazard Class</b>	8
<b>14.4 Packing Group</b>	II
<b>Description</b>	Not applicable
<b>14.5 Environmental hazard</b>	Not applicable
<b>14.6 Special Provisions</b>	IB8, IP2, IP4, T3, TP33
<b>ERG Code</b>	154

## Section 15: REGULATORY INFORMATION

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Chemical Name	French RG number	Title
Hafnium Dichloride Oxide 13759-17-6	-	-
Zirconium Dichloride Oxide 7699-43-6	-	-

**European Union**

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

**Authorisations and/or restrictions on use:**

This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

**International Inventories**

<b>DSL/NDSL</b>	Complies
<b>EINECS/ELINCS</b>	Complies
<b>ENCS</b>	Complies
<b>IECSC</b>	Not Listed
<b>KECL</b>	Complies
<b>PICCS</b>	Not Listed
<b>AICS</b>	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

**15.2. Chemical safety assessment**

No chemical safety assessment has been performed for this product.



**Section 16: OTHER INFORMATION**

**Issue Date** 08-Dec-2017

**Revision Date** 19-May-2020

**Revision Note** SDS sections updated: 1, 2, 5, 6, 7, 9, 11, 14, 15.

**This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006**

**Note:**

The information provided in this Material 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](http://ATImetals.com)