



# SAFETY DATA SHEET

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Version 1

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

### 1.1. Product identifier

**Product Code** SAC041  
**Product Name** Hafnium Oxychloride Solution

**UN/ID no** 1760  
**Synonyms** Hafnium Oxychloride Solution; Hafnium Chloride Oxide Solution, Hafnium Dichloride Oxide Solution, Hafnium Dichloride Monoxide Solution

### 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** Liquid**Physical state** Liquid**Odour** Pungent, Slight chlorine**Precautionary Statements - Prevention**

Do not breathe gas/mist/vapours/spray

Wear protective gloves/protective clothing/eye protection/face 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): Rinse cautiously with water for several minutes. 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 corrosive resistant container

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant.

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

Not applicable

**Other Information**

.

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

Hafnium Oxychloride Solution: Hafnium Chloride Oxide Solution, Hafnium Dichloride Oxide Solution, Hafnium Dichloride Monoxide Solution.

Chemical Name	EC No	CAS No	Weight-%
Water	231-791-2	7732-18-5	62 - 75
Hafnium Dichloride Oxide	237-345-3	13759-17-6	25 - 35

**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**

Wash off immediately with soap and plenty of water. 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 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

**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**

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. Ensure adequate ventilation, especially in confined areas.

**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 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. Keep in corrosion resistant containers.

**Incompatible materials**

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
Water 7732-18-5	-	-	-	-	-
Hafnium Dichloride Oxide 13759-17-6	-	-	-	-	-
Chemical Name	Italy	Portugal	Netherlands	Finland	Denmark
Water 7732-18-5	-	-	-	-	-
Hafnium Dichloride Oxide 13759-17-6	-	-	-	-	-
Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Water 7732-18-5	-	-	-	-	-
Hafnium Dichloride Oxide 13759-17-6	-	-	-	-	-

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

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

**8.2. Exposure controls**

**Engineering Controls** Avoid generation of uncontrolled mist.

**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 gases/mists/vapours 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.

**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>	Liquid	<b>Odour</b>	Pungent, Slight chlorine
<b>Appearance</b>	Liquid	<b>Odour threshold</b>	
<b>Colour</b>	clear		
<b>Property</b>	<b>Values</b>	<b>Remarks • Method</b>	
pH	<1		

Melting point / freezing point	- °C / - °F	
Boiling point / boiling range	-	
Flash point	-	
Evaporation rate	-	
Flammability (solid, gas)	-	Not flammable
Flammability Limit in Air		
Upper flammability limit:	-	
Lower flammability limit	-	
Vapour pressure	-	
Vapour density	-	Not applicable
Specific Gravity	1.4	
Water solubility	-	Not applicable
Solubility(ies)	-	-
Partition coefficient	-	Not applicable
Autoignition temperature	-	Not applicable
Decomposition temperature	-	
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	-

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

Not applicable .

**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**

None under normal processing.

**10.4. Conditions to avoid**

To avoid thermal decomposition, do not overheat.

**10.5. Incompatible materials**

Alcohols, phenols, and amines. Rubber, coatings, and some plastics.

**10.6. Hazardous decomposition products**

Thermal decomposition produces hydrogen chloride gas.

## 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
Water	-	-	-
Hafnium Dichloride Oxide	3500 mg/kg bw	-	-

### Information on toxicological effects

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

### 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 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
Water	-	-	-	-
Hafnium Dichloride Oxide	-	-	-	-

### 12.2. Persistence and degradability

### 12.3. Bioaccumulative potential

**12.4. Mobility in soil**

Mobility  
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**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>	1760
<b>14.2 Proper shipping name</b>	Corrosive liquid, 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>	B2, IB2, T11, TP2, TP27
<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>	1760
<b>14.2 Proper shipping name</b>	Corrosive liquid, 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>	B2, IB2, T11, TP2, TP27

**ADR**

<b>14.1 UN/ID no</b>	1760
<b>14.2 Proper shipping name</b>	Corrosive liquid, 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>	B2, IB2, T11, TP2, TP27

**ICAO (air)**

<b>14.1 UN/ID no</b>	1760
<b>14.2 Proper shipping name</b>	Corrosive liquid, 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>	B2, IB2, T11, TP2, TP27

**IATA**

<b>14.1 UN/ID no</b>	1760
<b>14.2 Proper shipping name</b>	Corrosive liquid, 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>	B2, IB2, T11, TP2, TP27 154
<b>ERG Code</b>	

## Section 15: REGULATORY INFORMATION

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

Chemical Name	French RG number	Title
Water 7732-18-5	-	-
Hafnium Dichloride Oxide 13759-17-6	-	-

#### 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

<b>Issue Date</b>	06-Apr-2017
<b>Revision Date</b>	20-Dec-2019
<b>Revision Note</b>	Updated to comply with GHS.



**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)