



# PRODUCT INFORMATION SHEET

**MATERION**

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1. Product identifier

<b>Name of the substance</b>	Hafnium product
<b>Identification number</b>	231-166-4 (EC number)
<b>Synonyms</b>	None.
<b>Document number</b>	49
<b>Issue date</b>	18-August-2017
<b>Version number</b>	04
<b>Revision date</b>	09-May-2018
<b>Supersedes date</b>	09-May-2018

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

<b>Identified uses</b>	Not available.
<b>Uses advised against</b>	None known.

### 1.3. Details of the supplier of the product information sheet

#### Supplier

<b>Company name</b>	Materion Advanced Materials Group	
<b>Address</b>	42 Mt. Ebo Road South Brewster, NY 10509 United States	
<b>Division</b>		
<b>Telephone</b>	Supplier Phone	1+845.279.0900
<b>e-mail</b>	Not available.	
<b>Contact person</b>	Not available.	

<b>1.4. Emergency telephone number</b>	Chemtrec	1+703.527.3887
--	----------	----------------

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008 as amended

<b>Physical hazards</b>	
Flammable solids	Category 2

<b>Hazard summary</b>	Not available.
-----------------------	----------------

### 2.2. Label elements

#### Label according to Regulation (EC) No. 1272/2008 as amended

<b>Contains:</b>	Hafnium
<b>Hazard pictograms</b>	None.
<b>Signal word</b>	Warning
<b>Hazard statements</b>	The Material as sold in solid form is generally not considered hazardous. However, if the process involves grinding, melting, cutting or any other process that causes a release of dust or fumes, hazardous levels of airborne particulate could be generated.

#### Precautionary statements

<b>Prevention</b>	
P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting equipment.
P280	Wear protective gloves/eye protection/face protection.
<b>Response</b>	
P370 + P378	In case of fire: Use appropriate media to extinguish.
<b>Storage</b>	Not available.
<b>Disposal</b>	Not available.

**Supplemental label information** None.

**2.3. Other hazards** None known.

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

#### General information

Chemical name	%	CAS-No. / EC No.	REACH Registration No.	INDEX No.	Notes
Hafnium	99,9 - 100	7440-58-6 231-166-4	-	-	
<b>Classification:</b>	Flam. Sol. 2;H228				

## SECTION 4: First aid measures

**General information** Not available.

### 4.1. Description of first aid measures

**Inhalation** Not available.

**Skin contact** Not available.

**Eye contact** Not available.

**Ingestion** Not available.

**4.2. Most important symptoms and effects, both acute and delayed** Not available.

**4.3. Indication of any immediate medical attention and special treatment needed** Not available.

## SECTION 5: Firefighting measures

**General fire hazards** Not available.

### 5.1. Extinguishing media

**Suitable extinguishing media** Not available.

**Unsuitable extinguishing media** Not available.

**5.2. Special hazards arising from the substance or mixture** Not available.

### 5.3. Advice for firefighters

**Special protective equipment for firefighters** Not available.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** Not available.

**For emergency responders** Not available.

**6.2. Environmental precautions** Not available.

**6.3. Methods and material for containment and cleaning up** Not available.

**6.4. Reference to other sections** Not available.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling** Not available.

**7.2. Conditions for safe storage, including any incompatibilities** Not available.

7.3. Specific end use(s) Not available.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### Occupational exposure limits

##### Austria. MAK List, OEL Ordinance (GwV), BGBl. II, no. 184/2001

Material	Type	Value	Form
Hafnium product	MAK	0,5 mg/m <sup>3</sup>	Inhalable fraction.
	STEL	5 mg/m <sup>3</sup>	Inhalable fraction.
Components	Type	Value	Form
Hafnium (CAS 7440-58-6)	MAK	0,5 mg/m <sup>3</sup>	Inhalable fraction.
	STEL	5 mg/m <sup>3</sup>	Inhalable fraction.

##### Belgium. Exposure Limit Values.

Material	Type	Value
Hafnium product	TWA	0,5 mg/m <sup>3</sup>
Components	Type	Value
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>

##### Denmark. Exposure Limit Values

Material	Type	Value	Form
Hafnium product	TLV	0,5 mg/m <sup>3</sup>	Dust.
Components	Type	Value	Form
Hafnium (CAS 7440-58-6)	TLV	0,5 mg/m <sup>3</sup>	Dust.

##### Finland. Workplace Exposure Limits

Material	Type	Value
Hafnium product	TWA	0,5 mg/m <sup>3</sup>
Components	Type	Value
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>

##### France. Threshold Limit Values (VLEP) for Occupational Exposure to Chemicals in France, INRS ED 984

Material	Type	Value
Hafnium product	VME	0,5 mg/m <sup>3</sup>
Components	Type	Value
Hafnium (CAS 7440-58-6)	VME	0,5 mg/m <sup>3</sup>

##### Greece. OELs (Decree No. 90/1999, as amended)

Material	Type	Value
Hafnium product	STEL	1,5 mg/m <sup>3</sup>
	TWA	0,5 mg/m <sup>3</sup>
Components	Type	Value
Hafnium (CAS 7440-58-6)	STEL	1,5 mg/m <sup>3</sup>
	TWA	0,5 mg/m <sup>3</sup>

##### Iceland. OELs. Regulation 154/1999 on occupational exposure limits

Material	Type	Value	Form
Hafnium product	TWA	0,5 mg/m <sup>3</sup>	Dust.
Components	Type	Value	Form
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>	Dust.

##### Ireland. Occupational Exposure Limits

Material	Type	Value
Hafnium product	STEL	1,5 mg/m <sup>3</sup>
	TWA	0,5 mg/m <sup>3</sup>
Components	Type	Value
Hafnium (CAS 7440-58-6)	STEL	1,5 mg/m <sup>3</sup>
	TWA	0,5 mg/m <sup>3</sup>

##### Italy. Occupational Exposure Limits

Material	Type	Value
Hafnium product	TWA	0,5 mg/m <sup>3</sup>

**Italy. Occupational Exposure Limits**

Components	Type	Value
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>

**Norway. Administrative Norms for Contaminants in the Workplace**

Material	Type	Value
Hafnium product	TLV	0,5 mg/m <sup>3</sup>

Components	Type	Value
Hafnium (CAS 7440-58-6)	TLV	0,5 mg/m <sup>3</sup>

**Poland. MACs. Regulation regarding maximum permissible concentrations and intensities of harmful factors in the work environment, Annex 1**

Material	Type	Value
Hafnium product	TWA	0,5 mg/m <sup>3</sup>

Components	Type	Value
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>

**Portugal. VLEs. Norm on occupational exposure to chemical agents (NP 1796)**

Material	Type	Value
Hafnium product	TWA	0,5 mg/m <sup>3</sup>

Components	Type	Value
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>

**Romania. OELs. Protection of workers from exposure to chemical agents at the workplace**

Material	Type	Value
Hafnium product	STEL	0,5 mg/m <sup>3</sup>
	TWA	0,2 mg/m <sup>3</sup>

Components	Type	Value
Hafnium (CAS 7440-58-6)	STEL	0,5 mg/m <sup>3</sup>
	TWA	0,2 mg/m <sup>3</sup>

Material	Type	Value
Hafnium product	STEL	0,5 mg/m <sup>3</sup>
	TWA	0,2 mg/m <sup>3</sup>

**Slovenia. OELs. Regulations concerning protection of workers against risks due to exposure to chemicals while working (Official Gazette of the Republic of Slovenia)**

Material	Type	Value	Form
Hafnium product	TWA	0,5 mg/m <sup>3</sup>	Inhalable fraction.

Components	Type	Value	Form
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>	Inhalable fraction.

**Spain. Occupational Exposure Limits**

Material	Type	Value
Hafnium product	TWA	0,5 mg/m <sup>3</sup>

Components	Type	Value
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>

**Switzerland. SUVA Grenzwerte am Arbeitsplatz**

Material	Type	Value	Form
Hafnium product	TWA	0,5 mg/m <sup>3</sup>	Inhalable dust.

Components	Type	Value	Form
Hafnium (CAS 7440-58-6)	TWA	0,5 mg/m <sup>3</sup>	Inhalable dust.

**Biological limit values** No biological exposure limits noted for the ingredient(s).

**Recommended monitoring procedures** Not available.

**Derived no effect levels (DNELs)** Not available.

**Predicted no effect concentrations (PNECs)** Not available.

**8.2. Exposure controls**

**Appropriate engineering controls** Not available.

**Individual protection measures, such as personal protective equipment**

**General information** Not available.

<b>Eye/face protection</b>	Not available.
<b>Skin protection</b>	
- <b>Hand protection</b>	Not available.
- <b>Other</b>	Not available.
<b>Respiratory protection</b>	Not available.
<b>Thermal hazards</b>	Not available.
<b>Hygiene measures</b>	Not available.
<b>Environmental exposure controls</b>	Not available.

## SECTION 9: Physical and chemical properties

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

#### Appearance

<b>Physical state</b>	Solid.
<b>Form</b>	Not available.
<b>Colour</b>	Not available.
<b>Odour</b>	Not available.
<b>Odour threshold</b>	Not available.
<b>pH</b>	Not available.
<b>Melting point/freezing point</b>	2233 °C (4051,4 °F)
<b>Initial boiling point and boiling range</b>	4603 °C (8317,4 °F)
<b>Flash point</b>	Not available.
<b>Evaporation rate</b>	Not available.
<b>Flammability (solid, gas)</b>	Not available.
<b>Upper/lower flammability or explosive limits</b>	
<b>Flammability limit - lower (%)</b>	Not available.
<b>Flammability limit - upper (%)</b>	Not available.
<b>Vapour pressure</b>	< 0,0000001 kPa at 25 °C
<b>Vapour density</b>	Not available.
<b>Relative density</b>	Not available.
<b>Solubility(ies)</b>	
<b>Solubility (water)</b>	Insoluble
<b>Partition coefficient (n-octanol/water)</b>	Not available.
<b>Auto-ignition temperature</b>	20 °C (68 °F)
<b>Decomposition temperature</b>	Not available.
<b>Viscosity</b>	Not available.
<b>Explosive properties</b>	Not available.
<b>Oxidising properties</b>	Not available.

### 9.2. Other information

<b>Density</b>	13,31 g/cm <sup>3</sup> estimated
<b>Molecular formula</b>	Hf
<b>Molecular weight</b>	178,49 g/mol
<b>Specific gravity</b>	13,31

## SECTION 10: Stability and reactivity

<b>10.1. Reactivity</b>	Not available.
<b>10.2. Chemical stability</b>	Not available.
<b>10.3. Possibility of hazardous reactions</b>	Not available.
<b>10.4. Conditions to avoid</b>	Not available.
<b>10.5. Incompatible materials</b>	Not available.
<b>10.6. Hazardous decomposition products</b>	Not available.

## SECTION 11: Toxicological information

**General information** Not available.

### Information on likely routes of exposure

**Inhalation** Not available.

**Skin contact** Not available.

**Eye contact** Not available.

**Ingestion** Not available.

**Symptoms** Not available.

### 11.1. Information on toxicological effects

**Acute toxicity** No data available.

**Skin corrosion/irritation** Not available.

**Serious eye damage/eye irritation** Not available.

**Respiratory sensitisation** Not available.

**Skin sensitisation** Not available.

**Germ cell mutagenicity** Not available.

### Carcinogenicity

**Hungary. 26/2000 EüM Ordinance on protection against and preventing risk relating to exposure to carcinogens at work (as amended)**

Not listed.

**Reproductive toxicity** Not available.

**Specific target organ toxicity - single exposure** Not available.

**Specific target organ toxicity - repeated exposure** Not available.

**Aspiration hazard** Not available.

**Mixture versus substance information** Not available.

**Other information** Not available.

## SECTION 12: Ecological information

**12.1. Toxicity** No toxicity data noted for the ingredient(s).

**12.2. Persistence and degradability** Not available.

**12.3. Bioaccumulative potential** Not available.

**Partition coefficient n-octanol/water (log Kow)** Not available.

**Bioconcentration factor (BCF)** Not available.

**12.4. Mobility in soil** Not available.

**12.5. Results of PBT and vPvB assessment** Not a PBT or vPvB substance or mixture.

**12.6. Other adverse effects** Not available.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

**Residual waste** Not available.

**Contaminated packaging** Not available.

**EU waste code** Not available.

## SECTION 14: Transport information

### ADR

**14.1. UN number** UN1326

**14.2. UN proper shipping name** HAFNIUM POWDER, WETTED with not less than 25% water

### 14.3. Transport hazard class(es)

Class	4.1
Subsidiary risk	-
Label(s)	4.1
Hazard No. (ADR)	40
Tunnel restriction code	E

14.4. Packing group II

14.5. Environmental hazards No.

14.6. Special precautions for user Not available.

### RID

14.1. UN number UN1326

14.2. UN proper shipping name HAFNIUM POWDER, WETTED with not less than 25% water

### 14.3. Transport hazard class(es)

Class	4.1
Subsidiary risk	-
Label(s)	4.1

14.4. Packing group II

14.5. Environmental hazards No.

14.6. Special precautions for user Not available.

### ADN

14.1. UN number UN1326

14.2. UN proper shipping name HAFNIUM POWDER, WETTED with not less than 25% water

### 14.3. Transport hazard class(es)

Class	4.1
Subsidiary risk	-
Label(s)	4.1

14.4. Packing group II

14.5. Environmental hazards No.

14.6. Special precautions for user Not available.

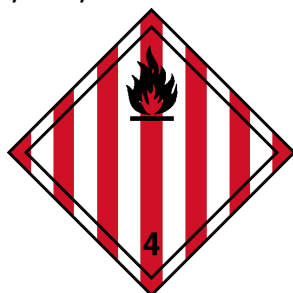
### IATA

14.1. - 14.6.: Not regulated as dangerous goods.

### IMDG

14.1. - 14.6.: Not regulated as dangerous goods.

### ADN; ADR; RID



## SECTION 15: Regulatory information

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

#### EU regulations

**Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and II, as amended**  
Not listed.

**Regulation (EC) No. 850/2004 On persistent organic pollutants, Annex I as amended**  
Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 1 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 2 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex I, Part 3 as amended**

Not listed.

**Regulation (EU) No. 649/2012 concerning the export and import of dangerous chemicals, Annex V as amended**

Not listed.

**Regulation (EC) No. 166/2006 Annex II Pollutant Release and Transfer Registry, as amended**

Not listed.

**Regulation (EC) No. 1907/2006, REACH Article 59(10) Candidate List as currently published by ECHA**

Not listed.

#### **Authorisations**

**Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorization, as amended**

Not listed.

#### **Restrictions on use**

**Regulation (EC) No. 1907/2006, REACH Annex XVII Substances subject to restriction on marketing and use as amended**

Not listed.

**Directive 2004/37/EC: on the protection of workers from the risks related to exposure to carcinogens and mutagens at work, as amended.**

Not listed.

#### **Other EU regulations**

**Directive 2012/18/EU on major accident hazards involving dangerous substances, as amended**

Not listed.

#### **National regulations**

Not available.

#### **15.2. Chemical safety assessment**

Not available.

### **SECTION 16: Other information**

#### **List of abbreviations**

Not available.

#### **Information on evaluation method leading to the classification of mixture**

Not available.