

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 13.09.2018

Version 1.6

---

**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Catalogue No. 170322

Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

REACH Registration Number This product is a mixture. REACH Registration Number see section 3.

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

Identified uses Reagent for analysis

For additional information on uses please refer to the Merck Chemicals portal ([www.merckgroup.com](http://www.merckgroup.com)).

**1.3 Details of the supplier of the safety data sheet**

Responsible Department LS-QHC \* e-mail: [prodsafe@merckgroup.com](mailto:prodsafe@merckgroup.com)

Regional representation Merck Chemicals Ltd \* The Old Brickyard \* New Road \* Gillingham \*  
Dorset \* SP8 4XT \* Tel. +44(0)1747 833000 \*  
[information@merckchem.co.uk](mailto:information@merckchem.co.uk).

**1.4 Emergency telephone number** +49 (0) 6151 722440

---

**SECTION 2. Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Corrosive to metals, Category 1, H290

For the full text of the H-Statements mentioned in this Section, see Section 16.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

#### Hazard pictograms



#### Signal word

Warning

#### Hazard statements

H290 May be corrosive to metals.

## 2.3 Other hazards

None known.

---

## SECTION 3. Composition/information on ingredients

Chemical nature Aqueous solution

### 3.1 Substance

Not applicable

### 3.2 Mixture

#### Hazardous components (REGULATION (EC) No 1272/2008)

##### Chemical name (Concentration)

CAS-No.	Registration number	Classification
---------	---------------------	----------------

Hydrochloric Acid (>= 5 % - < 10 % )		
--------------------------------------	--	--

*Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.*

-	01-2119484862-27-	
---	-------------------	--

XXXX		
------	--	--

Corrosive to metals, Category 1, H290

Skin corrosion, Category 1B, H314

Specific target organ toxicity - single exposure, Category 3, H335

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	170322
Product name	Hafnium ICP standard traceable to SRM from NIST HfCl <sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

For the full text of the H-Statements mentioned in this Section, see Section 16.

---

## SECTION 4. First aid measures

### 4.1 Description of first aid measures

After inhalation: fresh air.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/shower.

After eye contact: rinse out with plenty of water. Remove contact lenses.

After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

### 4.2 Most important symptoms and effects, both acute and delayed

irritant effects

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

No information available.

---

## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

#### *Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

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

Not combustible.

Ambient fire may liberate hazardous vapours.

Fire may cause evolution of:

Hydrogen chloride gas

### 5.3 Advice for firefighters

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	170322
Product name	Hafnium ICP standard traceable to SRM from NIST HfCl <sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

### *Special protective equipment for firefighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### *Further information*

Suppress (knock down) gases/vapours/mists with a water spray jet.

Prevent fire extinguishing water from contaminating surface water or the ground water system.

---

## **SECTION 6. Accidental release measures**

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

Advice for non-emergency personnel: Do not breathe vapours, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains.

### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent and neutralising material (e.g. Chemisorb® H<sup>+</sup>, Merck Art. No. 101595). Dispose of properly. Clean up affected area.

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

Indications about waste treatment see section 13.

---

## **SECTION 7. Handling and storage**

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

#### *Advice on safe handling*

Observe label precautions.

---

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

## *Hygiene measures*

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

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

### *Requirements for storage areas and containers*

No metal or light-weight-metal containers.

### *Storage conditions*

Tightly closed.

Recommended storage temperature see product label.

## **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

---

## **SECTION 8. Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Components with workplace control parameters**

#### *Components*

Basis	Value	Threshold limits	Remarks
<i>Hydrochloric Acid</i>			
EH40 WEL	Short Term Exposure Limit (STEL):	5 ppm 8 mg/m <sup>3</sup>	Form of exposure: Gas and aerosol mists.
	Time Weighted Average (TWA):	1 ppm 2 mg/m <sup>3</sup>	Form of exposure: Gas and aerosol mists.

#### **Derived No Effect Level (DNEL)**

#### *Hydrochloric Acid*

Worker DNEL, acute	Local effects	inhalation	15 mg/m <sup>3</sup>
--------------------	---------------	------------	----------------------

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

Worker DNEL, Local effects inhalation 8 mg/m<sup>3</sup>  
longterm

## Recommended monitoring procedures

Methods for measurement of the workplace atmosphere have to correspond to the requirements of norms DIN EN 482 and DIN EN 689.

## Predicted No Effect Concentration (PNEC)

### *Hydrochloric Acid*

PNEC Fresh water	0.036 mg/l
PNEC Marine water	0.036 mg/l
PNEC Aquatic intermittent release	0.045 mg/l
PNEC Sewage treatment plant	0.036 mg/l

## 8.2 Exposure controls

### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

### Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Safety glasses

#### *Hand protection*

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0.11 mm

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

Break through time: 480 min  
splash contact:

Glove material: Nitrile rubber  
Glove thickness: 0.11 mm  
Break through time: 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

### *Other protective equipment*

Acid-resistant protective clothing

### *Respiratory protection*

required when vapours/aerosols are generated.

Recommended Filter type: filter ABEK

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

### **Environmental exposure controls**

Do not let product enter drains.

---

## **SECTION 9. Physical and chemical properties**

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

Form liquid

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	170322
Product name	Hafnium ICP standard traceable to SRM from NIST HfCl <sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

Colour	colourless
Odour	odourless
Odour Threshold	Not applicable
pH	ca. 0 at 20 °C
Melting point	No information available.
Boiling point	No information available.
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	No information available.
Relative vapour density	No information available.
Density	ca. 1.035 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	No information available.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	170322
Product name	Hafnium ICP standard traceable to SRM from NIST HfCl <sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

Partition coefficient: n-octanol/water	No information available.
--	---------------------------

Auto-ignition temperature	No information available.
---------------------------	---------------------------

Decomposition temperature	No information available.
---------------------------	---------------------------

Viscosity, dynamic	No information available.
--------------------	---------------------------

Explosive properties	Not classified as explosive.
----------------------	------------------------------

Oxidizing properties	none
----------------------	------

## 9.2 Other data

Corrosion	May be corrosive to metals.
-----------	-----------------------------

---

## SECTION 10. Stability and reactivity

### 10.1 Reactivity

See section 10.3

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Generates dangerous gases or fumes in contact with:

Metals

Violent reactions possible with:

The generally known reaction partners of water.

### 10.4 Conditions to avoid

no information available

### 10.5 Incompatible materials

Metals, metal alloys

---

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	170322
Product name	Hafnium ICP standard traceable to SRM from NIST HfCl <sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

## 10.6 Hazardous decomposition products

in the event of fire: See section 5.

---

## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### Mixture

##### *Acute oral toxicity*

This information is not available.

##### *Acute inhalation toxicity*

This information is not available.

##### *Acute dermal toxicity*

This information is not available.

##### *Skin irritation*

Possible damages: slight irritation

##### *Eye irritation*

Possible damages: slight irritation

##### *Sensitisation*

This information is not available.

##### *Germ cell mutagenicity*

This information is not available.

##### *Carcinogenicity*

This information is not available.

##### *Reproductive toxicity*

This information is not available.

##### *Teratogenicity*

This information is not available.

##### *Specific target organ toxicity - single exposure*

This information is not available.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

### *Specific target organ toxicity - repeated exposure*

This information is not available.

### *Aspiration hazard*

This information is not available.

## 11.2 Further information

However, when the product is handled appropriately, hazardous effects are unlikely to occur.

Handle in accordance with good industrial hygiene and safety practice.

## Components

### *Hydrochloric Acid*

#### *Skin irritation*

Rabbit

Result: Corrosive

OECD Test Guideline 404

#### *Eye irritation*

Rabbit

Result: Irreversible effects on the eye

OECD Test Guideline 405

#### *Sensitisation*

Maximisation Test Guinea pig

Result: Does not cause skin sensitisation.

Method: OECD Test Guideline 406

---

## SECTION 12. Ecological information

### Mixture

#### 12.1 Toxicity

No information available.

#### 12.2 Persistence and degradability

No information available.

#### 12.3 Bioaccumulative potential

No information available.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

## 12.4 Mobility in soil

No information available.

## 12.5 Results of PBT and vPvB assessment

Substance(s) in the mixture do(es) not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII, or a PBT/vPvB assessment was not conducted.

## 12.6 Other adverse effects

*Additional ecological information*

Harmful effect due to pH shift.

Hazard for drinking water supplies.

Discharge into the environment must be avoided.

## Components

*Hydrochloric Acid*

*Toxicity to fish*

Lepomis macrochirus (Bluegill sunfish): 20.5 mg/l; 96 h  
OECD Test Guideline 203

*Toxicity to daphnia and other aquatic invertebrates*

EC50: 1.3 mg/l; 48 h  
OECD Test Guideline 202

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

---

## SECTION 13. Disposal considerations

### *Waste treatment methods*

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Notice Directive on waste 2008/98/EC.

---

## SECTION 14. Transport information

### Land transport (ADR/RID)

14.1 UN number	UN 1789
14.2 Proper shipping name	HYDROCHLORIC ACID
14.3 Class	8
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	E

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

14.1 UN number UN 1789  
14.2 Proper shipping name HYDROCHLORIC ACID  
14.3 Class 8  
14.4 Packing group II  
14.5 Environmentally hazardous --  
14.6 Special precautions for user no

#### Sea transport (IMDG)

14.1 UN number UN 1789  
14.2 Proper shipping name HYDROCHLORIC ACID  
14.3 Class 8  
14.4 Packing group II  
14.5 Environmentally hazardous --  
14.6 Special precautions for user yes

EmS F-A S-B

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code  
Not relevant

---

## SECTION 15. Regulatory information

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

#### *EU regulations*

Major Accident Hazard SEVESO III  
Legislation Not applicable

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer not regulated

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 170322  
Product name Hafnium ICP standard traceable to SRM from NIST  
HfCl<sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1$  % (w/w).

*National legislation*

Storage class 8B

## 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

---

## SECTION 16. Other information

### Full text of H-Statements referred to under sections 2 and 3.

H290 May be corrosive to metals.  
H314 Causes severe skin burns and eye damage.  
H335 May cause respiratory irritation.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	170322
Product name	Hafnium ICP standard traceable to SRM from NIST HfCl <sub>4</sub> in HCl 7% 1000 mg/l Hf Certipur®

---

Warning

*Hazard statements*

H290 May be corrosive to metals.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

---

*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*