

INTATRADE  
**MATERIAL SAFETY DATA SHEET**  
according to 1907/2006/EC, Article 31

Printed: 16.03.2022

## 1. IDENTIFICATION OF SUBSTANCE AND OF THE COMPANY

Product name: **Bis(cyclopentadienyl)hafnium dichloride**  
Product code: EO00633  
Company: INTATRADE Chemicals GmbH  
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REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS No.: 12116-66-4

## 2. HAZARDS IDENTIFICATION

Hazard designation: C Corrosive  
Information pertaining to particular dangers for man and environment: R 34 Causes burns.  
GHS label elements:



**Danger**  
H314 - Causes severe skin burns and eye damage.  
Prevention: P260 Do not breathe dust/fume/gas/mist/vapours/spray.  
Response: P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.  
P303+P361+P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
Storage: P405 Store locked up.  
Disposal: P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization  
Designation: Bis(cyclopentadienyl)hafnium dichloride  
CAS-No.: 12116-66-4  
FC-No.: 235-177-5

Additional information:

Hafnium is routinely found with a low level of zirconium since separation of the two elements is difficult.

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#### 4. FIRST AID MEASURES

General information  
After inhalation

Instantly remove any clothing soiled by the product.  
Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

Seek immediate medical advice.  
Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.  
Rinse opened eye for several minutes under running water. Then consult doctor.

After swallowing

Seek immediate medical advice.

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#### 5. FIRE FIGHTING MEASURES

Suitable extinguishing agents

CO<sub>2</sub>, extinguishing powder or water jet. Fight larger fires with water jet or alcohol-resistant foam.

Special hazards caused by the material, its products of combustion or flue gases:

Can be released in case of fire:  
Carbon monoxide and carbon dioxide  
Hydrogen chloride (HCl)

Protective equipment:

Wear self-contained breathing apparatus. Wear full protective suit.

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#### 6. ACCIDENTAL RELEASE MEASURES

Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Use neutralizing agent.  
Dispose of contaminated material as waste according to item 13.  
Ensure adequate ventilation.

Additional information:

See Section 7 for information on safe handling  
See section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

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#### 7. HANDLING AND STORAGE

Handling

Information for safe handling:

Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation/exhaustion at the workplace.

Information about protection against explosions and fires:

Keep ignition sources away - Do not smoke.

Storage

Requirements to be met by storerooms and containers:  
Information about storage in one common storage facility:

No special requirements.  
Store away from oxidizing agents.  
Store away from water.  
Store away from air.

Further information about storage conditions:

Protect from humidity and keep away from water.  
Store under dry inert gas.  
Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.  
Store in a locked cabinet or with access restricted to technical experts or their assistants.

## 8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Additional information about design of technical systems:	Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.
Components with critical values that require monitoring at the workplace:	Hafnium, metal and compounds as Hf      mg/m <sup>3</sup> ACGIH TLV      0.5 Austria MAK      0.5 Belgium TWA      0.5 Denmark TWA      0.5 Finland TWA      0.5 France VME      0.5 Germany MAK      0.5 Korea TLV      0.5 Netherlands MAC-TGG      0.5 Norway TWA      0.5 Poland TWA      0.5 Switzerland MAK-W      0.5 United Kingdom TWA      0.5; 1.5-STEL USA PEL      0.5
Personal protective equipment General protective and hygienic measures:	The usual precautionary measures should be adhered to in handling the chemicals. Keep away from foodstuffs, beverages and food. Instantly remove any soiled and impregnated garments. Wash hands during breaks and at the end of the work. Avoid contact with the eyes and skin.
Breathing equipment:	Use breathing protection with high concentrations.
Eye protection:	Tightly sealed safety glasses, full face protection
Body protection:	Protective work clothing.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

General Information	
Form:	Crystalline
Colour:	Light brown
Smell:	Not determined
Change in condition	
Melting point/Melting range:	230-233°C
Boiling point/Boiling range:	Not determined
Sublimation temperature/start:	Not determined
Flash point:	Not applicable
Ignition temperature:	Not determined
Decomposition temperature:	Not determined
Danger of explosion:	Product is not explosive.
Critical values for explosion:	
Lower:	Not determined
Upper:	Not determined
Steam pressure:	Not determined
Density:	Not determined
Solubility in water:	Decomposes

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## 10. STABILITY AND REACTIVITY

Thermal decomposition / conditions to be avoided:	No decomposition if used and stored according to specifications.
Materials to be avoided:	Oxidizing agents, water/moisture, air
Dangerous reactions:	No dangerous reactions known

## 11. TOXICOLOGICAL INFORMATION

Acute toxicity:

Primary irritant effect:

on the skin:

Corrosive effect on skin and mucous membranes.

on the eye:

Strong corrosive effect.

Sensitization:

No sensitizing effect known.

Additional toxicological information: Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.

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## 12. ECOLOGICAL INFORMATION

Additional ecological information

General notes:

Generally not hazardous for water.

Do not allow material to be released to the environment without proper governmental permits.

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## 13. DISPOSAL CONSIDERATIONS

Product

Recommendation:

Consult state, local or national regulations for proper disposal.

Hand over to disposers of hazardous waste.

Must be specially treated under adherence to official regulations.

Uncleaned packagings

Recommendation:

Disposal must be made according to official regulations.

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## 14. TRANSPORT INFORMATION

Land transport ADR/RID and GGVS/GGVE (cross-border/domestic)

ADR/RID-GGVS/E Class:

8 (C4) Corrosive substances.

Kemler Number:

80

UN-Number:

3261

Packaging group:

III

Label

8

Designation of goods:

3261 CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.  
(Bis(cyclopentadienyl)hafnium dichloride)

Limited quantities (LQ)

LQ24

Transport category

3

Tunnel restriction code

E

Maritime transport IMDG/GGVSea:

IMDG/GGVSea Class:

8

UN Number:

3261

Label

8

Packaging group:

III

Marine pollutant:

No

Segregation groups

Acids

Correct technical name:

CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.  
(Bis(cyclopentadienyl)hafnium dichloride)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class:

8

UN/ID Number:

3261

Label

8

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Correct technical name: CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.  
(Bis(cyclopentadienyl)hafnium dichloride)

UN "Model Regulation": UN3261, CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S., 8, III

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## 15. REGULATORY INFORMATION

Designation according to EC guidelines:

Code letter and hazard

designation of product:

C Corrosive

Risk phrases:

34 Causes burns.

Safety phrases:

20 When using do not eat or drink.

26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

60 This material and its container must be disposed of as hazardous waste.

National regulations

Information about limitation of use: Employment restrictions concerning young persons must be observed.  
For use only by technically qualified individuals.

Water hazard class:

Generally not hazardous for water.

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## 16. OTHER INFORMATION

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Intatrade Chemicals GmbH shall not be held liable for any damage resulting from handling or from contact with the above product.