

<a href="#">Bis(pentamethylcyclopentadienyl)hafnium Dichloride</a>		<a href="#">Pricing &gt;</a>
Linear Formula	[(CH <sub>3</sub> ) <sub>5</sub> C <sub>5</sub> ] <sub>2</sub> HfCl <sub>2</sub>	
Pubchem CID	21908586	
MDL Number	MFCD00058887	
EC No.	N/A	
IUPAC Name	hafnium(4+); 1,2,3,5,5-pentamethylcyclopenta-1,3-diene; dichloride	
SMILES	CC1=[C-]C(C(=C1C)C)(C)C.CC1=[C-]C(C(=C1C)C)(C)C.[Cl-].[Cl-].[Hf+4]	
Inchl Identifier	InChI=1S/2C10H15.2ClH.Hf/c2*1-7-6-10(4,5)9(3)8(7)2;;;/h2*1-5H3;2*1H;/q2*-1;;;+4/p-2	
Inchl Key	YPRLSLCBPOTFGE-UHFFFAOYSA-L	
Signal Word	Warning	
Hazard Statements	H302-H312-H315-H319-H332-H335	
Hazard Codes	Xi	
Precautionary Statements	P261-P280-P305 + P351 + P338	
Risk Codes	N/A	
Safety Statements	N/A	
Transport Information	NONH for all modes of transport	
WGK Germany	3	

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## SAFETY DATA SHEET

Date Accessed: 04/20/2024

Date Revised: 01/15/2022

### SECTION 1. IDENTIFICATION

**Product Identifiers:** All applicable American Elements product codes for CAS #85959-83-7

**Relevant identified uses of the substance:**  
Scientific research and development

Supplier details:  
American Elements  
10884 Weyburn Ave.

Los Angeles, CA 90024

Tel: +1 310-208-0551

Fax: +1 310-208-0351

Emergency telephone number:

Domestic, North America +1 800-424-9300

International +1 703-527-3887

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## SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture

d~?GHS07

Skin Irrit. 2 H315 Causes skin irritation.

Eye Irrit. 2A H319 Causes serious eye irritation.

STOT SE 3 H335 May cause respiratory irritation.

GHS label elements

The substance is classified and labeled according to the Globally Harmonized System (GHS).



Hazard pictograms

d~?GHS07

Signal word Warning

Hazard-determining components of labeling:

Bis(pentamethylcyclopentadienyl)hafnium dichloride,  
min. 98%

Hazard statements

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

Precautionary statements

P231 Handle under inert gas.

P262 Do not get in eyes, on skin, or on clothing.

P280 Wear protective gloves/protective clothing/eye  
protection/face protection.

P305+P351+P338 If in eyes: Rinse cautiously with  
water for several minutes. Remove contact lenses, if  
present

and easy to do. Continue rinsing.

P403+P233 Store in a well-ventilated place. Keep  
container tightly closed.

P501 Dispose of contents/container in accordance  
with local/regional/national/international  
regulations.

Classification system:

NFPA ratings (scale 0 - 4)

1

0

0

Health = 1

Fire = 0

Reactivity = 0  
HMIS-ratings (scale 0 - 4)  
HEALTH  
FIRE  
REACTIVITY  
1  
0  
0  
Health = 1  
Fire = 0  
Reactivity = 0  
Other hazards  
Results of PBT and vPvB assessment  
PBT: N/A  
vPvB: N/A

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### **SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substances  
CAS # / Substance Name  
85959-83-7 Bis(pentamethylcyclopentadienyl)hafnium  
dichloride, min.  
98%

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### **SECTION 4. FIRST AID MEASURES**

Description of first aid measures  
If inhaled: In case of unconsciousness place patient  
stably in side position for transportation.  
In case of skin contact: Immediately wash with soap  
and water; rinse thoroughly.  
In case of eye contact:  
Rinse opened eye for several minutes under running  
water. If symptoms persist, consult a doctor.  
If swallowed: If symptoms persist consult doctor.  
Information for doctor:  
Most important symptoms and effects, both acute and  
delayed:  
No data available  
Indication of any immediate medical attention and  
special treatment needed  
No data available

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### **SECTION 5. FIREFIGHTING MEASURES**

Extinguishing media  
Suitable extinguishing agents:  
CO<sub>2</sub>, extinguishing powder or water spray. Fight  
larger fires with water spray or alcohol resistant foam.

Special hazards arising from the substance or mixture  
No data available  
Advice for firefighters  
Protective equipment: No special measures required.

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## **SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures Not required.  
Environmental precautions: No special measures required.  
Methods and materials for containment and cleanup:  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.  
Reference to other sections  
See Section 7 for information on safe handling.  
See Section 8 for information on personal protection equipment.  
See Section 13 for disposal information.

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## **SECTION 7. HANDLING AND STORAGE**

Handling:  
Precautions for safe handling No special precautions are necessary if used correctly.  
Information about protection against explosions and fires: No special measures required.  
Conditions for safe storage, including any incompatibilities:  
Requirements to be met by storerooms and receptacles: No special requirements.  
Information about storage in one common storage facility: Not required.  
Further information about storage conditions:  
Keep receptacle tightly sealed.  
Store in cool, dry conditions in well sealed receptacles.  
Specific end use(s) No data available

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## **SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

Additional information about design of technical systems: No further data; see item 7.  
Control parameters  
Components with limit values that require monitoring at the workplace: Not required.  
Additional information: The lists that were valid during

the creation were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Breathing equipment:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Protection of hands:

SProtective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

RTightly sealed goggles

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## **SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Information on basic physical and chemical properties

Appearance:

Form: Crystalline

Color: White

Odor: undistinguishable

Odor threshold: No data available.

pH: N/A

Melting point/Melting range: no data °C

Boiling point/Boiling range: no data °C

Flash point: N/A

Flammability (solid, gas): Product is not flammable.  
Ignition temperature:  
Decomposition temperature: No data available.  
Autoignition: No data available.  
Danger of explosion: Product does not present an explosion hazard.  
Explosion limits:  
Lower: No data available.  
Upper: No data available.  
Vapor pressure: no data hPa  
Density: No data available.  
Relative density No data available.  
Vapor density N/A  
Evaporation rate N/A  
Solubility in / Miscibility with  
Water: Insoluble.  
Partition coefficient (n-octanol/water): No data available.  
Viscosity:  
Dynamic: N/A  
Kinematic: N/A  
Solvent content:  
Organic solvents: 0.0 %  
VOC content: 0.0 g/l / 0.00 lb/gl  
Solids content: 100.0 %  
Other information No data available

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## **SECTION 10. STABILITY AND REACTIVITY**

Reactivity No data available  
Chemical stability  
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.  
Possibility of hazardous reactions No dangerous reactions known.  
Conditions to avoid No data available  
Incompatible materials: No data available  
Hazardous decomposition products: No dangerous decomposition products known.

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## **SECTION 11. TOXICOLOGICAL INFORMATION**

Information on toxicological effects  
Acute toxicity:  
Primary irritant effect:  
on the skin: Irritant to skin and mucous membranes.  
on the eye: Irritating effect.  
Sensitization: No sensitizing effects known.  
Additional toxicological information:  
Carcinogenic categories

IARC (International Agency for Research on Cancer)  
Substance is not listed.  
NTP (National Toxicology Program)  
Substance is not listed.  
OSHA-Ca (Occupational Safety & Health  
Administration)  
Substance is not listed.

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## **SECTION 12. ECOLOGICAL INFORMATION**

Toxicity  
Aquatic toxicity: No data available  
Persistence and degradability No data available  
Behavior in environmental systems:  
Bioaccumulative potential No data available  
Mobility in soil No data available  
Additional ecological information: Not known to be  
hazardous to water.  
Results of PBT and vPvB assessment  
PBT: N/A  
vPvB: N/A  
Other adverse effects No data available

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

Waste treatment methods  
Recommendation:  
Must not be disposed of together with household  
garbage. Do not allow product to enter drains, sewage  
systems, or other water courses system.  
Uncleaned packagings:  
Recommendation: Disposal must be made according  
to official regulations.

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## **SECTION 14. TRANSPORT INFORMATION**

UN-Number  
DOT, ADN, IMDG, IATA not regulated  
UN proper shipping name  
DOT, ADN, IMDG, IATA not regulated  
Transport hazard class(es)  
DOT, ADN, IMDG, IATA  
Class not regulated  
Packing group  
DOT, IMDG, IATA not regulated  
Environmental hazards:  
Marine pollutant: No  
Special precautions for user N/A  
Transport in bulk according to Annex II of

## **SECTION 15. REGULATORY INFORMATION**

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

Sara

Section 355 (extremely hazardous substances):

Substance is not listed.

Section 313 (Specific toxic chemical listings):

Substance is not listed.

TSCA (Toxic Substances Control Act):

Substance is not listed.

Proposition 65

Chemicals known to cause cancer:

Substance is not listed.

Chemicals known to cause reproductive toxicity for females:

Substance is not listed.

Chemicals known to cause reproductive toxicity for males:

Substance is not listed.

Chemicals known to cause developmental toxicity:

Substance is not listed.

Carcinogenic categories

EPA (Environmental Protection Agency)

Substance is not listed.

TLV (Threshold Limit Value established by ACGIH)

Substance is not listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)

Substance is not listed.

GHS label elements

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Hazard pictograms

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Signal word Warning

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P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P403+P233 Store in a well-ventilated place. Keep container tightly closed.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.  
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

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## **16. OTHER INFORMATION**

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). 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. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.

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