

# Safety Data Sheet

according to 1907/2006/EC, Article 31

Revision: 10.08.2010

Printing date 10.08.2010

**1 Identification of substance****Product details****Trade name*****Bis(methylcyclopentadienyl)zirconium dichloride*****Stock number:**

H27241

**Manufacturer/Supplier:**Alfa Aesar GmbH & Co.KG  
Benzstrasse 3  
D-76185 Karlsruhe / GermanyE-mail: gcat@matthey.com  
www.alfa-chemcat.com**Informing department:**

Product safety department.

**Emergency information:**Giftnotruf Universität Mainz / Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telefon:+49(0)6131/19240**2 Hazards identification****Hazard designation:**C Corrosive  
F Highly flammable**Information pertaining to particular dangers for man and environment**R 15 Contact with water liberates extremely flammable gases.  
R 34 Causes burns.**GHS label elements****Danger**

H260 - In contact with water releases flammable gases which may ignite spontaneously.

**Danger**

H314 - Causes severe skin burns and eye damage.

P231+P232 Handle under inert gas. Protect from moisture.

P260

Do not breathe dust/fume/gas/mist/vapours/spray.

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.

P405 Store locked up.

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

**Prevention:****Response:****Storage:****Disposal:****3 Composition/information on ingredients****Chemical characterization:**Bis(methylcyclopentadienyl)zirconium-  
dichloride (CAS# 12109-71-6)**Designation: (CAS#)**

Zirconium is routinely found with a low level of hafnium since separation of the two elements is difficult.

**Additional information:****4 First aid measures****General information**

Instantly remove any clothing soiled by the product.

**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

**After skin contact**

Seek immediate medical advice.

**After eye contact**

Instantly wash with water and soap and rinse thoroughly.

**After swallowing**

Seek immediate medical advice.

Rinse opened eye for several minutes under running water. Then consult doctor.

Seek immediate medical advice.

**5 Fire fighting measures****Suitable extinguishing agents**

In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.

**For safety reasons unsuitable extinguishing agents**

Water.

**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)  
Metal oxide**Protective equipment:**Wear self-contained breathing apparatus.  
Wear full protective suit.**6 Accidental release measures****Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

**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.

Do not flush with water or aqueous cleansing agents

Keep away from ignition sources.

See Section 7 for information on safe handling

See section 8 for information on personal protection equipment.

See Section 13 for information on disposal.

**Additional information:****7 Handling and storage****Handling****Information for safe handling:**

Handle under dry protective gas.

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.

Protect against electrostatic charges.

(Contd. on page 2)  
GB

**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Revision: 10.08.2010

Printing date 10.08.2010

Trade name **Bis(methylcyclopentadienyl)zirconium dichloride**

(Contd. of page 1)

**Storage Requirements to be met by storerooms and containers:**  
**Information about storage in one common storage facility:**  
**Further information about storage conditions:**

No special requirements.  
 Store away from water.  
 Store away from oxidizing agents.  
 Store under dry inert gas.  
 This product is moisture sensitive.  
 Keep container tightly sealed.  
 Store in cool, dry conditions in well sealed containers.  
 Protect from humidity and keep away from water.  
 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:**

Zirconium and compounds, as Zr  
 mg/m<sup>3</sup>  
 ACGIH TLV 10; 10-STEEL, Not classifiable as human carcinogen  
 Australia TWA 5; 10-STEEL  
 Austria MAK 5  
 Denmark TWA 5  
 Finland TWA 5  
 Korea TLV 5  
 Hungary 5-STEEL  
 Poland TWA 5; 10-STEEL  
 Russia 6-STEEL  
 OSHA PEL 5

**Additional information:** No data

**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.  
 Use breathing protection with high concentrations.  
 Check protective gloves prior to each use for their proper condition.  
 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.  
 Impervious gloves  
 Not determined

**Breathing equipment:**  
**Protection of hands:**  
**Material of gloves**

Safety glasses  
 Tightly sealed safety glasses.  
 Face protection  
 Full face protection

**Penetration time of glove material**  
**Eye protection:**

Protective work clothing.

**Body protection:**

**9 Physical and chemical properties:**

**General Information**

**Form:** Crystalline powder  
**Colour:** White  
**Smell:** Not determined

**Change in condition**  
**Melting point/Melting range:** 180-184°C  
**Boiling point/Boiling range:** Not determined  
**Sublimation temperature / start:** Not determined

**Flash point:** Not applicable

**Inflammability (solid, gaseous)** Contact with water liberates extremely flammable gases.

**Ignition temperature:** Not determined

**Decomposition temperature:** Not determined

**Critical values for explosion:**  
**Lower:** Not determined  
**Upper:** Not determined

**Steam pressure:** Not determined

**Density** Not determined

**Solubility in / Miscibility with Water:** Contact with water releases flammable gases

**10 Stability and reactivity**

**Thermal decomposition / conditions to be avoided:**  
**Materials to be avoided:**

No decomposition if used and stored according to specifications.  
 Water/moisture  
 Oxidizing agents  
 Reducing agents

**Dangerous reactions:** Contact with water releases flammable gases

**Dangerous products of decomposition:** Carbon monoxide and carbon dioxide  
 Hydrogen chloride (HCl)

(Contd. on page 3)  
GB

# Safety Data Sheet

according to 1907/2006/EC, Article 31

Printing date 10.08.2010

Revision: 10.08.2010

Trade name **Bis(methylcyclopentadienyl)zirconium dichloride**

Metal oxide

(Contd. of page 2)

**11 Toxicological information**

**Acute toxicity:**  
**Primary irritant effect:**  
**on the skin:**  
**on the eye:**  
**Sensitization:**

Corrosive effect on skin and mucous membranes.  
 Strong corrosive effect.  
 No sensitizing effect known.

**Additional toxicological information:**

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.  
 Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.  
 ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent in terms of its carcinogenicity in humans and/or animals.

**12 Ecological information:**

**Additional ecological information:**  
**General notes:**

Water hazard class 1 (Self-assessment): slightly hazardous for water.  
 Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system.  
 Do not allow material to be released to the environment without proper governmental permits.

**13 Disposal considerations**

**Product:**  
**Recommendation**

Hand over to disposers of hazardous waste.  
 Must be specially treated under adherence to official regulations.  
 Consult state, local or national regulations for proper disposal.

**Uncleaned packagings:**  
**Recommendation:**

Disposal must be made according to official regulations.

**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(methylcyclopentadienyl)zirconium dichloride)

**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(methylcyclopentadienyl)zirconium dichloride)

**Air transport ICAO-TI and IATA-DGR:****ICAO/IATA Class:**

8

**UN/ID Number:**

3261

**Label**

8

**Packaging group:**

III

**Correct technical name:**

CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S. (Bis(methylcyclopentadienyl)zirconium dichloride)

**UN "Model Regulation":**

UN3261, CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S., 8, III

**15 Regulatory information****Designation according to EC guidelines:**

**Code letter and hazard designation of product:**



C Corrosive  
 F Highly flammable

**Risk phrases:**

15 Contact with water liberates extremely flammable gases.  
 34 Causes burns.

**Safety phrases:**

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.  
 43 In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.  
 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**National regulations****Information about limitation of use:**

Employment restrictions concerning young persons must be observed.  
 For use only by technically qualified individuals.

(Contd. on page 4)

**Safety Data Sheet**  
according to 1907/2006/EC, Article 31

Printing date 10.08.2010

Revision: 10.08.2010

Trade name **Bis(methylcyclopentadienyl)zirconium dichloride****Water hazard class:**

Water hazard class 1 (Self-assessment): slightly hazardous for water.

(Contd. of page 3)

**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

**Department issuing data specification sheet:** Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:** ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International

Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

CAS: Chemical Abstracts Service (division of the American Chemical Society)

GB