

MATERIAL SAFETY DATA SHEET

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Bis(cyclopentadienyl)Zirconium dichloride

Synonym(s): Zirconocene dichloride

Product Code: NP-5901

General Use: Catalyst

Product Description: Not Available

MSDS Number: 5901US060405

MANUFACTURER: Company Name: NICHIA CORPORATION

Address: 491 Oka, Kaminaka-cho, Anan-shi, TOKUSHIMA 774-860 JAPAN

Telephone number: +81-884-22-23111

EMERGENCY TELEPHONE NUMBER:

United States: 717-285-2323 (NICHIA AMERICA CORPORATION)

International: +1-81-3-3456-3784 (NICHIA CORPORATION TOKYO OFFICE)

2. COMPOSITION/ INFORMATION ON INGREDIENTS

Chemical Composition:

Component	Chemical name	Wt%	CAS Registry#
(C ₅ H ₅) ₂ ZrCl ₂	Bis(cyclopentadienyl)zirconium dichloride	98.0	1291-32-3

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: The toxicological properties of this material have not been fully investigated. Causes eye and skin irritation. Causes digestive and respiratory tract irritation.

Moisture sensitive.

POTENTIAL HEALTH EFFECTS:

Inhalation: Causes respiratory tract irritation.

Eye: Causes eye irritation.

Skin: Causes skin irritation.

Ingestion: Causes gastrointestinal irritation with nausea, vomiting and diarrhea.

POTENTIAL ENVIRONMENTAL EFFECTS: No information available.

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4. FIRST AID MEASURES

INHALATION: Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

EYE: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

SKIN: Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

INGESTION: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

PROTECTION TO FIRST-AIDERS: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: This product is nonflammable.

EXTINGUISHING MEDIA: Use water spray, dry chemical, carbon dioxide, or chemical foam.

FIREFIGHTING INSTRUCTIONS: Wear full fire fighting turn-out gear (full-bunker gear) and respiratory protection (self-contained breathing apparatus).

6. ACCIDENTAL RELEASE MEASURES

LAND SPILL: Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section.

WATER SPILL: After dissolving in Acid or Alkali, it must be neutralized. Zirconium Hydroxide will settle on the bottom. It can be taken out as it is. It can also be burnt with flammable solvent to get Zirconium Oxide. Either waste must be disposed in accordance with industrial waste regulations.

7. HANDLING AND STORAGE

HANDLING: Wash thoroughly after handling. Wash hands before eating. Use with adequate ventilation. Avoid breathing dust, vapor, mist, or gas. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

STORAGE: Store in a cool, dry place. Store in a tightly closed container.

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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING LIMIT VALUE:

PEL: 5 mg/m³ (as Zr) (listed under Zirconium compounds, n.o.s.).

ACGIH: TLV-TWA 5 mg/m³ (as Zr) (listed under Zirconium compounds, n.o.s.).

STEL 10 mg/m³ (as Zr) (listed under Zirconium compounds, n.o.s.).

EXPOSURE CONTROLS:

OCCUPATIONAL EXPOSURE CONTROLS

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

Personal Protection

Respiratory Protection: Follow the OSHA respirator regulations found in 29 CFR 1910.134.

Always use a NIOSH approved respirator when necessary.

Eye Protection: Safety glasses are required.

Skin Protection: Protective gloves are recommended.

Environmental Exposure Controls: No information found.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Physical State: Solid

Color: White

Odor: Odorless

pH: Not available.

Melting Point: 242 - 245 deg C

Flash Point: Not available.

Flammability: Not available.

Specific Gravity: Not available.

Solubility in Water: Reacts. 200g/L(25 °C)

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10. STABILITY AND REACTIVITY

CONDITIONS TO AVOID: Not available.

STABILITY: Stable under normal temperatures and pressures.

MATERIAL TO AVOID: Ignition sources, exposure to moist air or water.

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS: Hydrogen chloride, carbon monoxide, carbon dioxide, titanium/titanium oxides.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity: No information available.

Eye Irritation: No information available.

Skin Irritation: No information available.

Sensitization: No information available.

Mutagenicity: No information available.

12. ECOLOGICAL INFORMATION

ECOTOXICITY DATA: No information available.

PERSISTENCE AND DEGRADABILITY: No information available.

BIOACCUMULATIVE POTENTIAL: No information available.

13. DISPOSAL CONSIDERATIONS

Comply with all federal, state and local regulations.

Do not dump this material into sewers, on the ground or into any body of water.

14. TRANSPORT INFORMATION

US DEPARTMENT OF TRANSPORTATION (DOT)

Hazardous Materials: Not Applicable.

SEA TRANSPORT

IMDG

Class: Not Applicable.

Packing Group(PG): Not Applicable.

UN Number: Not Applicable.

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Proper Shipping Name: Not Applicable.

Marine Pollutant: Not Applicable.

AIR TRANSPORT

ICAO/IATA

Class: Not Applicable.

Packing Group(PG): Not Applicable.

UN Number: Not Applicable.

Proper Shipping Name: Not Applicable.

15. REGULATORY INFORMATION

TSCA STATUS: This product on TSCA INVENTORY.

OSHA STATUS: This product is hazardous under 29 CFR 1910.1200 about Zr compounds.

Refer to any other federal, state and local regulations.

16. OTHER INFORMATION

This information is furnished without warranty, express or implied, except that it is accurate to the best knowledge of NICHIA Corporation.

It relates only to the specific product designated herein, and does not relate to use in combination with any other material or process. NICHIA Corporation assumes no legal responsibility for use or reliance upon this information.