Material Safety Data Sheet
Zirconium(IV) chloride, anhydrous, 98%

ACC# 52782

Section 1 - Chemical Product and Company Identification

MSDS Name: Zirconium(IV) chloride, anhydrous, 98%
Catalog Numbers: AC206410000, AC206410050, AC206411000, AC206415000
Synonyms: Zirconium tetrachloride; Zirconium chloride.
Company Identification:

Acros Organics N.V.
One Reagent Lane
Fair Lawn, NJ 07410

For information in North America, call: 800-ACROS-01
For emergencies in the US, call CHEMTREC: 800-424-9300

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
10026-11-6	Zirconium(IV) chloride, anhydrous	98	233-058-2

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: white glistening crystals. solid.
Danger! Causes eye and skin burns. Reacts violently with water. Material hydrolyzes in contact with moisture/water releasing toxic and corrosive fumes of hydrogen chloride and aqueous hydrochloric acid. May be harmful if swallowed. May cause severe respiratory tract irritation with possible burns. May cause severe digestive tract irritation with possible burns. Hygroscopic (absorbs moisture from the air).
Target Organs: Lungs, eyes, skin, mucous membranes.

Potential Health Effects

Eye: Causes eye burns.
Skin: Causes skin burns.
Ingestion: May cause severe and permanent damage to the digestive tract. Causes gastrointestinal tract burns. May be harmful if swallowed.
Inhalation: May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Causes chemical burns to the respiratory tract. Material releases hydrogen chloride on contact with water.
Chronic: Not available. In one inhalation study, exposure to zirconium tetrachloride (converted to zirconyl chloride in water) at a concentration of 6 mg Zr/m3 for 2 months was associated with a small increase in mortality of rats & guinea pigs and no increased mortality for rabbits, cats, or dogs. Respiratory infection subsequent to the inhaled zirconyl chloride mist was the reported cause of death. In 1-year inhalation studies with zirconium tetrachloride at 3.5 mg Zr/m3, no adverse effects on lab animals could be detected.

Section 4 - First Aid Measures

Eyes: In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid immediately.
Skin: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.
Ingestion: If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.
Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.
Notes to Physician: Treat symptomatically and supportively.

Section 5 - Fire Fighting Measures

General Information: As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Substance is noncombustible. May ignite or explode on contact with steam or moist air. Water hydrolyzes material liberating acidic gas which in contact with metal surfaces can generate flammable and/or explosive hydrogen gas.
Extinguishing Media: Use dry sand or earth to smother fire. Use dry chemical, carbon dioxide, or alcohol-resistant foam. DO NOT USE WATER! Water may cause violent reaction.
Flash Point: Not available.
Autoignition Temperature: Not available.
Explosion Limits, Lower: Not available.
Upper: Not available.
NFPA Rating: (estimated) Health: 3; Flammability: 0; Instability: 2; Special Hazard: -W-

Section 6 - Accidental Release Measures

General Information: Use proper personal protective equipment as indicated in Section 8.
Spills/Leaks: Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Provide ventilation. Do not expose spill to water.

Section 7 - Handling and Storage

Handling: Do not allow water to get into the container because of violent reaction. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not ingest or inhale. Use with adequate ventilation. Discard contaminated shoes. Keep from contact with moist air and steam.
Storage: Keep container closed when not in use. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from water.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.
Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Zirconium(IV) chloride, anhydrous	5 mg/m3 TWA (listed under Zirconium).10 mg/m3 STEL (listed under Zirconium).	5 mg/m3 TWA (listed under Zirconium).5 mg/m3 TWA (as Zr, except Zirconium tetrachloride) (listed under Zirconium compounds, n.o.s.).50 mg/m3 IDLH (listed under Zirconium).50 mg/m3 IDLH (as Zr excep t Zirconium tetrachloride) (listed under Zirconium compounds, n.o.s.).	5 mg/m3 TWA (listed under Zirconium).5 mg/m3 TWA (as Zr) (listed under Zirconium compounds, n.o.s.).

OSHA Vacated PELs: Zirconium(IV) chloride, anhydrous: No OSHA Vacated PELs are listed for this chemical.
Personal Protective Equipment
Eyes: Wear chemical splash goggles.
Skin: Wear appropriate protective gloves to prevent skin exposure.
Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respirators: Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9 - Physical and Chemical Properties

Physical State: Solid
Appearance: white glistening crystals.
Odor: None reported.
pH: Not available.
Vapor Pressure: 1.3 hPa @ 190 deg C
Vapor Density: Not available.
Evaporation Rate: Not available.
Viscosity: Not available.
Boiling Point: sublimes @ 300 deg C
Freezing/Melting Point:437 deg C(dec)
Decomposition Temperature: Not available.
Solubility: Reacts.
Specific Gravity/Density:2.800 g/cm3
Molecular Formula: Cl4Zr
Molecular Weight:233.03

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures. Liberates heat and hydrochloric acid on contact with water.
Conditions to Avoid: Exposure to moist air or water.
Incompatibilities with Other Materials: Amines, alcohols, acids, water.
Hazardous Decomposition Products: Hydrogen chloride.
Hazardous Polymerization: Has not been reported.

Section 11 - Toxicological Information

RTECS#:
CAS# 10026-11-6: ZH7175000
LD50/LC50:
CAS# 10026-11-6:
Oral, mouse: LD50 = 489 mg/kg;
Oral, rat: LD50 = 1688 mg/kg;
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Carcinogenicity:
CAS# 10026-11-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

Epidemiology: No information found.
Teratogenicity: No information found.
Reproductive Effects: No information found.
Mutagenicity: No information found.
Neurotoxicity: No information found.
Other Studies:

Section 12 - Ecological Information

No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.
RCRA P-Series: None listed.
RCRA U-Series: None listed.

Section 14 - Transport Information

	US DOT	Canada TDG
Shipping Name:	ZIRCONIUM TETRACHLORIDE	ZIRCONIUM TETRACHLORIDE
Hazard Class:	8	8
UN Number:	UN2503	UN2503
Packing Group:	III	III

Section 15 - Regulatory Information

US FEDERAL

TSCA
CAS# 10026-11-6 is listed on the TSCA inventory.
Health & Safety Reporting List
None of the chemicals are on the Health & Safety Reporting List.
Chemical Test Rules
None of the chemicals in this product are under a Chemical Test Rule.
Section 12b
None of the chemicals are listed under TSCA Section 12b.
TSCA Significant New Use Rule
None of the chemicals in this material have a SNUR under TSCA.
CERCLA Hazardous Substances and corresponding RQs
CAS# 10026-11-6: 5000 lb final RQ; 2270 kg final RQ
SARA Section 302 Extremely Hazardous Substances
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 10026-11-6: immediate, reactive.
Section 313 No chemicals are reportable under Section 313.
Clean Air Act:
This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone depletors.
This material does not contain any Class 2 Ozone depletors.
Clean Water Act:
CAS# 10026-11-6 is listed as a Hazardous Substance under the CWA.
None of the chemicals in this product are listed as Priority Pollutants under the CWA.
None of the chemicals in this product are listed as Toxic Pollutants under the CWA.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
CAS# 10026-11-6 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, (listed as Zirconium compounds, n.o.s.), Massachusetts.

California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations
European Labeling in Accordance with EC Directives
Hazard Symbols:
C
Risk Phrases:
R 14 Reacts violently with water.
R 22 Harmful if swallowed.
R 34 Causes burns.

Safety Phrases:

S 24/25 Avoid contact with skin and eyes.
S 7/8 Keep container tightly closed and dry.

WGK (Water Danger/Protection)

CAS# 10026-11-6: No information available.

Canada - DSL/NDSL

CAS# 10026-11-6 is listed on Canada's NDSL List.

Canada - WHMIS

This product has a WHMIS classification of E, F.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

CAS# 10026-11-6 is listed on the Canadian Ingredient Disclosure List.

Section 16 - Additional Information

MSDS Creation Date: 12/14/1998
Revision #3 Date: 10/05/2004