

**MATERIAL SAFETY DATA SHEET (MSDS)**
**ZIRCONIUM OXYCHLORIDE AR (OCTAHYDRATE) (FOR FLUORINE DETERMINATION)**
**1. Product Identification**

**Synonyms:** Zirconyl Chloride, Octahydrate  
**CAS No.:** 13520-92-8

Product Coad: Z0221600100

**Molecular Weight:** 322.25

**Chemical Formula:** ZrOCl<sub>2</sub>.8H<sub>2</sub>O

**2. Composition/Information on Ingredients**

Ingredient	CAS No	Percent	Hazardous
ZIRCONIUM OXYCHLORIDE	13520-92-8	90 - 100%	Yes

**3. Hazards Identification**
**Potential Acute Health Effects:**

Very hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Hazardous in case of skin contact (corrosive), of eye contact (corrosive). The amount of tissue damage depends on length of contact. Eye contact can result in corneal damage or blindness. Skin contact can produce inflammation and blistering. Inhalation of dust will produce irritation to gastro-intestinal or respiratory tract, characterized by burning, sneezing and coughing. Severe over-exposure can produce lung damage, choking, unconsciousness or death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

Repeated exposure of the eyes to a low level of dust can produce eye irritation. Repeated skin exposure can produce local skin destruction, or dermatitis. Repeated inhalation of dust can produce varying degree of respiratory irritation or lung damage.

**4. First Aid Measures**
**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

CHAITANYA CHS, 2<sup>nd</sup> FLOOR, OFFICE # 206, SIDDHARTH NAGAR, S.V.ROAD, GOREGAON (W), MUMBAI 400062, MH, INDIA.  
CONTACT: +9122 28725393 /94/ 95 | EMAILID: CARE@SUVCHEM.COM

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Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband.

WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

Ingestion:

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms

appear.

Serious Ingestion: Not available.

**5. Fire Fighting Measures**

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

**6. Accidental Release Measures**

**Small Spill:** Use appropriate tools to put the spilled solid in a convenient waste disposal container.

**Large Spill:** Corrosive solid. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

**7. Handling and Storage**

**Precautions:** Keep container dry. Do not ingest. Do not breathe dust. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, acids, alkalis.

**Storage:** Hygroscopic. Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above

**8. Exposure Controls/Personal Protection**

**Engineering Controls:**

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Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:**

Splash goggles. Synthetic apron. Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

TWA: 5 STEL: 10 (mg/m<sup>3</sup>) from ACGIH (TLV) [United States]

[Zirconyl Chloride (cas. no 7699-43-6)]

Consult local authorities for acceptable exposure limits.

**9. Physical and Chemical Properties**

**Physical state and appearance:** Solid. (Crystals solid. Solid needles.)

**Odor:** Odorless.

**Molecular Weight:** 322.25 g/mole

**Color:** Colorless. White.

**Boiling Point:** 210°C (410°F)

**Melting Point:** 150°C (302°F)

**Specific Gravity:** 1.91 (Water = 1)

**Solubility:** Soluble in cold water, methanol, diethyl ether, alcohol. Slightly soluble in Hydrochloric Acid. Insoluble in organic solvents.

**10. Stability and Reactivity**

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Incompatible materials.

**Incompatibility with various substances:** Reactive with oxidizing agents, acids, alkalis.

**Corrosivity:** Not available.

**Special Remarks on Reactivity:**

Hygroscopic. Decomposes in hot water. When heated to decomposition, it emits toxic fumes of HCl.

**Special Remarks on Corrosivity:** Not available.

**11. Toxicological Information**

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

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**Toxicity to Animals:** Acute oral toxicity (LD50): 1227 mg/kg [Mouse]. [Zirconyl Chloride (cas. no 7699-43-6)]

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:**

Very hazardous in case of skin contact (irritant), of ingestion, .

Hazardous in case of skin contact (corrosive), of eye contact (corrosive), of inhalation (lung corrosive).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

May affect genetic material (sister chromatid exchange in human leukocyte).

May cause cancer (tumorigenic) based on animal data. No human data found.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects:

Skin: Causes skin irritation and burns.

Eyes: Causes eye irritation and burns.

Ingestion: Causes digestive tract irritation with possible burns, stomach ulceration or bleeding.

May affect behavior (somnia), metabolism, respiration (dyspnea), and urinary system. [Zirconyl Chloride (cas. no 7699-43-6)]

Inhalation: Causes respiratory tract irritation and possible burns.

**12. Ecological Information**

**Environmental Fate:** No information found.

**Environmental Toxicity:** No information found.

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**14. Transport Information**

**DOT Classification:** Class 8: Corrosive material

**Identification:** : Corrosive solid, n.o.s. (Zirconyl chloride) UNNA: 1759 PG: III

**Special Provisions for Transport:** Not available.

**15. Regulatory Information**

**Federal and State Regulations:** Massachusetts RTK: Zirconyl (IV) Chloride, Octahydrate

**Other Regulations:**

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OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** CLASS E: Corrosive solid.

**DSCL (EEC):**

R34- Causes burns

S1/2- Keep locked up and out of the reach of children.

S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/37- Wear suitable protective clothing and gloves.

S39- Wear eye/face protection.

S45- In case of accident or if you feel unwell,

seek medical advice immediately (show the label where possible).

**HMIS (U.S.A.):**

**Health Hazard:** 3

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** j

**National Fire Protection Association (U.S.A.):**

**Health:** 3

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Synthetic apron.

Vapor and dust respirator. Be sure to use an approved/certified respirator or equivalent.

Splash goggles.

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**16. Other Information**

**Product Use:** Laboratory Reagent.

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In accordance with REACH Regulation (CE) N° 1907/2006 and with CLP Regulation (CE) N° 1272/2008

DISCLAIMER:

- **SUVCHEM** Products are to be used as Lab Chemicals for R&D only. Not for drug, medicinal, household or other uses.
  - **SUVCHEM** shall not be responsible for any damage resulting from handling or from contact with the above product.
  - **SUVCHEM** provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.
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