

## SAFETY DATA SHEET

Creation Date 14-May-2010

Revision Date 25-Jan-2024

Revision Number 7

### 1. Identification

**Product Name** Zirconyl chloride octahydrate

**Cat No. :** AC208370000; AC208370050; AC208371000; AC208375000

**CAS No** 13520-92-8  
**Synonyms** Dichlorooxozirconium octahydrate; Zirconium ch; Zirconium(IV)oxide chloride octahydrate

**Recommended Use** Laboratory chemicals.  
**Uses advised against** Food, drug, pesticide or biocidal product use.

#### Details of the supplier of the safety data sheet

**Company**

Fisher Scientific Company  
One Reagent Lane  
Fair Lawn, NJ 07410  
Tel: (201) 796-7100

Acros Organics  
One Reagent Lane  
Fair Lawn, NJ 07410

**Emergency Telephone Number**For information **US** call: 001-800-227-6701 / **Europe** call: +32 14 57 52 11Emergency Number **US**:001-201-796-7100 / **Europe**: +32 14 57 52 99**CHEMTREC** Tel. No. **US**:001-800-424-9300 / **Europe**:001-703-527-3887

### 2. Hazard(s) identification

**Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

|                                                  |              |
|--------------------------------------------------|--------------|
| Corrosive to metals                              | Category 1   |
| Skin Corrosion/Irritation                        | Category 1 B |
| Serious Eye Damage/Eye Irritation                | Category 1   |
| Specific target organ toxicity (single exposure) | Category 3   |
| Target Organs - Respiratory system.              |              |

**Label Elements****Signal Word**

Danger

**Hazard Statements**

May be corrosive to metals

Causes severe skin burns and eye damage

May cause respiratory irritation

**Precautionary Statements****Prevention**

Do not breathe dust/fume/gas/mist/vapors/spray  
Wash face, hands and any exposed skin thoroughly after handling  
Wear protective gloves/protective clothing/eye protection/face protection  
Use only outdoors or in a well-ventilated area  
Keep only in original container

**Response**

Immediately call a POISON CENTER or doctor/physician

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Skin**

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower  
Wash contaminated clothing before reuse

**Eyes**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

**Ingestion**

IF SWALLOWED: Rinse mouth. DO NOT induce vomiting

**Spills**

Absorb spillage to prevent material damage

**Storage**

Store locked up  
Store in a well-ventilated place. Keep container tightly closed  
Store in corrosive resistant polypropylene container with a resistant inliner  
Store in a dry place

**Disposal**

Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**

None identified

### 3. Composition/Information on Ingredients

| Component                            | CAS No     | Weight % |
|--------------------------------------|------------|----------|
| Zirconium, dichlorooxo-, octahydrate | 13520-92-8 | >95      |
| Zirconium oxychloride                | 7699-43-6  | -        |

### 4. First-aid measures

**General Advice**

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. Keep eye wide open while rinsing.

**Skin Contact**

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Call a physician immediately.

**Inhalation**

Remove to fresh air. If not breathing, give artificial respiration. Call a physician or poison

|                                            |                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                            | control center immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.                                                   |
| <b>Ingestion</b>                           | Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person.                                                                                                                                                  |
| <b>Most important symptoms and effects</b> | Causes burns by all exposure routes. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation |
| <b>Notes to Physician</b>                  | Treat symptomatically                                                                                                                                                                                                                                                                           |

## 5. Fire-fighting measures

|                                         |                                                                                                                                                                           |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Suitable Extinguishing Media</b>     | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. CO <sub>2</sub> , dry chemical, dry sand, alcohol-resistant foam. |
| <b>Unsuitable Extinguishing Media</b>   | No information available                                                                                                                                                  |
| <b>Flash Point</b>                      | No information available                                                                                                                                                  |
| <b>Method -</b>                         | No information available                                                                                                                                                  |
| <b>Autoignition Temperature</b>         | No information available                                                                                                                                                  |
| <b>Explosion Limits</b>                 |                                                                                                                                                                           |
| <b>Upper</b>                            | No data available                                                                                                                                                         |
| <b>Lower</b>                            | No data available                                                                                                                                                         |
| <b>Sensitivity to Mechanical Impact</b> | No information available                                                                                                                                                  |
| <b>Sensitivity to Static Discharge</b>  | No information available                                                                                                                                                  |

### Specific Hazards Arising from the Chemical

The product causes burns of eyes, skin and mucous membranes.

### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Hydrogen chloride.

### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Thermal decomposition can lead to release of irritating gases and vapors.

### NFPA

**Health**  
3

**Flammability**  
1

**Instability**  
1

**Physical hazards**  
N/A

## 6. Accidental release measures

|                                  |                                                                                                                             |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Personal Precautions</b>      | Use personal protective equipment as required. Evacuate personnel to safe areas. Avoid contact with skin, eyes or clothing. |
| <b>Environmental Precautions</b> | Should not be released into the environment. Do not allow material to contaminate ground water system.                      |

**Methods for Containment and Clean Up** Sweep up and shovel into suitable containers for disposal. Avoid dust formation.

## 7. Handling and storage

|                 |                                                                                                                                                                                                                                |
|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Handling</b> | Do not get in eyes, on skin, or on clothing. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe dust. Do not ingest. If swallowed then seek immediate medical assistance. |
| <b>Storage.</b> | Corrosives area. Protect from moisture. Store under an inert atmosphere. Keep containers                                                                                                                                       |

tightly closed in a dry, cool and well-ventilated place. Incompatible Materials. Strong oxidizing agents. Strong bases.

## 8. Exposure controls / personal protection

### Exposure Guidelines

| Component                            | ACGIH TLV                                              | OSHA PEL                                                                   | NIOSH                                                                                | Mexico OEL (TWA)                                       |
|--------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------|
| Zirconium, dichlorooxo-, octahydrate | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | (Vacated) TWA: 5 mg/m <sup>3</sup><br>(Vacated) STEL: 10 mg/m <sup>3</sup> | IDLH: 25 mg/m <sup>3</sup><br>TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> |
| Zirconium oxychloride                | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | (Vacated) TWA: 5 mg/m <sup>3</sup><br>(Vacated) STEL: 10 mg/m <sup>3</sup> | IDLH: 25 mg/m <sup>3</sup><br>TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> |

### Legend

ACGIH - American Conference of Governmental Industrial Hygienists

OSHA - Occupational Safety and Health Administration

NIOSH: NIOSH - National Institute for Occupational Safety and Health

### Engineering Measures

Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety showers are close to the workstation location.

### Personal Protective Equipment

#### Eye/face Protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

#### Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

#### Respiratory Protection

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.

#### Recommended Filter type:

Particulates filter conforming to EN 143.

#### Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

## 9. Physical and chemical properties

|                                        |                          |
|----------------------------------------|--------------------------|
| Physical State                         | Powder Solid             |
| Appearance                             | Off-white                |
| Odor                                   | No information available |
| Odor Threshold                         | No information available |
| pH                                     | < 1 @ 20°C 50 g/l aq.sol |
| Melting Point/Range                    | No data available        |
| Boiling Point/Range                    | No information available |
| Flash Point                            | No information available |
| Evaporation Rate                       | Not applicable           |
| Flammability (solid,gas)               | No information available |
| Flammability or explosive limits       |                          |
| Upper                                  | No data available        |
| Lower                                  | No data available        |
| Vapor Pressure                         | No information available |
| Vapor Density                          | Not applicable           |
| Specific Gravity                       | 1.910                    |
| Solubility                             | Soluble in water         |
| Partition coefficient; n-octanol/water | No data available        |
| Autoignition Temperature               | No information available |

|                           |                                           |
|---------------------------|-------------------------------------------|
| Decomposition Temperature | > 150°C                                   |
| Viscosity                 | Not applicable                            |
| Molecular Formula         | Cl <sub>2</sub> O Zr . 8 H <sub>2</sub> O |
| Molecular Weight          | 322.25                                    |

## 10. Stability and reactivity

|                                  |                                                                            |
|----------------------------------|----------------------------------------------------------------------------|
| Reactive Hazard                  | None known, based on information available                                 |
| Stability                        | Hygroscopic.                                                               |
| Conditions to Avoid              | Excess heat. Exposure to moist air or water.                               |
| Incompatible Materials           | Strong oxidizing agents, Strong bases                                      |
| Hazardous Decomposition Products | Carbon monoxide (CO), Carbon dioxide (CO <sub>2</sub> ), Hydrogen chloride |
| Hazardous Polymerization         | No information available.                                                  |
| Hazardous Reactions              | None under normal processing.                                              |

## 11. Toxicological information

### Acute Toxicity

#### Product Information

##### Component Information

| Component                            | LD50 Oral                 | LD50 Dermal | LC50 Inhalation |
|--------------------------------------|---------------------------|-------------|-----------------|
| Zirconium, dichlorooxo-, octahydrate | ca. 3.500 mg/kg (Rat)     | Not listed  | Not listed      |
| Zirconium oxychloride                | LD50 = 3500 mg/kg ( Rat ) | Not listed  | Not listed      |

|                                      |                          |
|--------------------------------------|--------------------------|
| Toxicologically Synergistic Products | No information available |
|--------------------------------------|--------------------------|

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

|                 |                                                                                          |
|-----------------|------------------------------------------------------------------------------------------|
| Irritation      | Causes burns by all exposure routes                                                      |
| Sensitization   | No information available                                                                 |
| Carcinogenicity | The table below indicates whether each agency has listed any ingredient as a carcinogen. |

| Component                            | CAS No     | IARC       | NTP        | ACGIH      | OSHA       | Mexico     |
|--------------------------------------|------------|------------|------------|------------|------------|------------|
| Zirconium, dichlorooxo-, octahydrate | 13520-92-8 | Not listed | Not listed | Not listed | Not listed | Not listed |
| Zirconium oxychloride                | 7699-43-6  | Not listed | Not listed | Not listed | Not listed | Not listed |

|                   |                          |
|-------------------|--------------------------|
| Mutagenic Effects | No information available |
|-------------------|--------------------------|

|                      |                           |
|----------------------|---------------------------|
| Reproductive Effects | No information available. |
|----------------------|---------------------------|

|                       |                           |
|-----------------------|---------------------------|
| Developmental Effects | No information available. |
|-----------------------|---------------------------|

|                |                           |
|----------------|---------------------------|
| Teratogenicity | No information available. |
|----------------|---------------------------|

|                          |                    |
|--------------------------|--------------------|
| STOT - single exposure   | Respiratory system |
| STOT - repeated exposure | None known         |

|                   |                          |
|-------------------|--------------------------|
| Aspiration hazard | No information available |
|-------------------|--------------------------|

|                                    |                                                                                      |
|------------------------------------|--------------------------------------------------------------------------------------|
| Symptoms / effects, both acute and | Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. |
|------------------------------------|--------------------------------------------------------------------------------------|

**delayed** Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

Do not empty into drains.

| Component             | Freshwater Algae | Freshwater Fish                                                                                              | Microtox   | Water Flea |
|-----------------------|------------------|--------------------------------------------------------------------------------------------------------------|------------|------------|
| Zirconium oxychloride | Not listed       | LC50: = 15 mg/L, 96h static<br>(Lepomis macrochirus)<br>LC50: = 18 mg/L, 96h static<br>(Pimephales promelas) | Not listed | Not listed |

**Persistence and Degradability** Soluble in water Persistence is unlikely based on information available.

**Bioaccumulation/ Accumulation** No information available.

**Mobility** Will likely be mobile in the environment due to its water solubility.

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

## 14. Transport information

### DOT

UN-No UN3260  
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.  
Technical Name Zirconium, dichlorooxo-, octahydrate  
Hazard Class 8  
Packing Group II

### TDG

UN-No UN3260  
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.  
Hazard Class 8  
Packing Group II

### IATA

UN-No UN3260  
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.  
Hazard Class 8  
Packing Group II

### IMDG/IMO

UN-No UN3260  
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.  
Hazard Class 8  
Packing Group II

## 15. Regulatory information

### United States of America Inventory

| Component                               | CAS No     | TSCA | TSCA Inventory notification -<br>Active-Inactive | TSCA - EPA Regulatory<br>Flags |
|-----------------------------------------|------------|------|--------------------------------------------------|--------------------------------|
| Zirconium, dichlorooxo-,<br>octahydrate | 13520-92-8 | -    | -                                                | -                              |
| Zirconium oxychloride                   | 7699-43-6  | X    | ACTIVE                                           | -                              |

**Legend:**

TSCA US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

- - Not Listed

**TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)**

Not applicable

**TSCA 12(b)** - Notices of Export

Not applicable

**International Inventories**

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

| Component                            | CAS No     | DSL | NDSL | EINECS    | PICCS | ENCS | ISHL | AICS | IECSC | KECL     |
|--------------------------------------|------------|-----|------|-----------|-------|------|------|------|-------|----------|
| Zirconium, dichlorooxo-, octahydrate | 13520-92-8 | -   | -    | -         | X     | X    | X    | X    | X     | -        |
| Zirconium oxychloride                | 7699-43-6  | X   | -    | 231-717-9 | X     | X    | X    | X    | X     | KE-35627 |

KECL - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)**U.S. Federal Regulations****SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

**SARA 311/312 Hazard Categories**

Should this product meet EPCRA 311/312 Tier reporting criteria at 40 CFR 370, refer to Section 2 of this SDS for appropriate classifications.

**CWA (Clean Water Act)**

Not applicable

**Clean Air Act**

Not applicable

**OSHA - Occupational Safety and Health Administration**

Not applicable

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

**California Proposition 65**

This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

| Component                            | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--------------------------------------|---------------|------------|--------------|----------|--------------|
| Zirconium, dichlorooxo-, octahydrate | -             | -          | -            | -        | X            |
| Zirconium oxychloride                | X             | -          | -            | -        | X            |

**U.S. Department of Transportation**

Reportable Quantity (RQ):

N

DOT Marine Pollutant N  
DOT Severe Marine Pollutant N

**U.S. Department of Homeland Security** This product does not contain any DHS chemicals.

**Other International Regulations**

**Mexico - Grade** No information available

**Authorisation/Restrictions according to EU REACH**

| Component                            | CAS No     | REACH (1907/2006) - Annex XIV - Substances Subject to Authorization | REACH (1907/2006) - Annex XVII - Restrictions on Certain Dangerous Substances | REACH Regulation (EC 1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC) |
|--------------------------------------|------------|---------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Zirconium, dichlorooxo-, octahydrate | 13520-92-8 | -                                                                   | Use restricted. See item 75.<br>(see link for restriction details)            | -                                                                                                     |
| Zirconium oxychloride                | 7699-43-6  | -                                                                   | Use restricted. See item 75.<br>(see link for restriction details)            | -                                                                                                     |

**REACH links**

<https://echa.europa.eu/substances-restricted-under-reach>

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

| Component                            | CAS No     | OECD HPV       | Persistent Organic Pollutant | Ozone Depletion Potential | Restriction of Hazardous Substances (RoHS) |
|--------------------------------------|------------|----------------|------------------------------|---------------------------|--------------------------------------------|
| Zirconium, dichlorooxo-, octahydrate | 13520-92-8 | Not applicable | Not applicable               | Not applicable            | Not applicable                             |
| Zirconium oxychloride                | 7699-43-6  | Listed         | Not applicable               | Not applicable            | Not applicable                             |

**Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)?**

Not applicable

**Other International Regulations**

| Component                            | CAS No     | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification | Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements | Rotterdam Convention (PIC) | Basel Convention (Hazardous Waste) |
|--------------------------------------|------------|-------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------|------------------------------------|
| Zirconium, dichlorooxo-, octahydrate | 13520-92-8 | Not applicable                                                                            | Not applicable                                                                           | Not applicable             | Not applicable                     |
| Zirconium oxychloride                | 7699-43-6  | Not applicable                                                                            | Not applicable                                                                           | Not applicable             | Not applicable                     |

**16. Other information**

**Prepared By** Regulatory Affairs  
Thermo Fisher Scientific  
Email: EMSDS.RA@thermofisher.com

|                         |                                                                                                                                                                                                                                         |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Creation Date</b>    | 14-May-2010                                                                                                                                                                                                                             |
| <b>Revision Date</b>    | 25-Jan-2024                                                                                                                                                                                                                             |
| <b>Print Date</b>       | 25-Jan-2024                                                                                                                                                                                                                             |
| <b>Revision Summary</b> | This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS). |

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

**End of SDS**