Section 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Product Code SAC033
Product Name Zirconium Oxychloride Powder
UN/ID no 1759
Synonyms Zirconium Oxychloride Powder: Zirconium Chloride Oxide, Zirconium Chloride Hydroxide, Zirconium Dichloride Dihydroxide, Zirconyl Chloride Crystals. (Product #313)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Chemical intermediate
Uses advised against

1.3. Details of the supplier of the safety data sheet

Manufacturer ATI, 1000 Six PPG Place, Pittsburgh, PA 15222 USA

1.4. Emergency telephone number

Emergency Telephone Chemtrec: +1-703-741-5970

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin corrosion/irritation</td>
<td>1B</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>1</td>
</tr>
<tr>
<td>May be corrosive to metals</td>
<td>1</td>
</tr>
</tbody>
</table>

2.2. Label elements

Danger

Hazard statements
May be corrosive to metals
Causes severe skin burns and eye damage
Causes serious eye damage

Emergency Overview
Precautionary Statements - Prevention
Do not breathe dust/gas/mist
Wear protective gloves/protective clothing/eye protection

Precautionary Statements - Response
IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician
IF ON SKIN (or hair): Brush off loose particles from skin. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Wash contaminated clothing before reuse
Absorb spillage to prevent material damage

Precautionary Statements - Storage
Store in a dry place
Store in corrosive resistant container

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant.

2.3 Hazards not otherwise classified (HNOC)
Not applicable
Other Information

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Synonyms

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>EC No</th>
<th>CAS No</th>
<th>Weight-%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide</td>
<td>231-717-9</td>
<td>7699-43-6</td>
<td>&gt;99</td>
</tr>
</tbody>
</table>

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a doctor or poison control centre immediately.

Skin Contact
Brush off loose particles from skin. Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Eye contact
Flush with water for 15 minutes. See a physician.

Ingestion
Do NOT induce vomiting. Have patient drink large quantities of water if able. Call Physician immediately for further instructions.

4.2. Most important symptoms and effects, both acute and delayed
Symptoms
May cause acute gastrointestinal effects if swallowed. Contact with moist skin may cause skin burns. May cause breathing difficulties if inhaled.

4.3. Indication of any immediate medical attention and special treatment needed
Note to doctors

Treat symptomatically.

Section 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media
Non-combustible.

Unsuitable extinguishing media
Non-combustible. If a fire occurs in the area, avoid water contact with the product to prevent evolution of hazardous gases.

5.2. Special hazards arising from the substance or mixture

Non-combustible

Hazardous combustion products: Hydrogen chloride gas may cause respiratory and/or eye irritation.

5.3. Advice for firefighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions
Use personal protective equipment as required.

For emergency responders
Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 171.

6.2. Environmental precautions

Collect spillage to prevent release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Sweep or shovel material into dry containers. Avoid creating uncontrolled dust. Wash the spill location thoroughly with water. Respiratory protection may be needed. Skin and eye protection should be used during cleanup.

6.4. Reference to other sections

See Section 12: ECOLOGICAL INFORMATION.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling
Handle in accordance with good industrial hygiene and safety practice. Protect from moisture. Reacts with water. Ensure adequate ventilation, especially in confined areas. Handle under inert gas such as nitrogen or argon to maintain the integrity of the product.

General Hygiene Considerations
Handle in accordance with good industrial hygiene and safety practice.

7.2. Conditions for safe storage, including any incompatibilities
Storage Conditions

Incompatible materials
Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics. Reacts with metals to produce heat and corrosive gases.

7.3. Specific end use(s)

Risk Management Methods (RMM)
The information required is contained in this Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>European Union</th>
<th>United Kingdom</th>
<th>France</th>
<th>Spain</th>
<th>Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide 7699-43-6</td>
<td>-</td>
<td>TWA: 5 mg/m³</td>
<td>-</td>
<td>STEL: 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Italy</th>
<th>Portugal</th>
<th>Netherlands</th>
<th>Finland</th>
<th>Denmark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide 7699-43-6</td>
<td>STEL: 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>-</td>
<td>TWA: 1 mg/m³</td>
<td>TWA: 5 mg/m³</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Austria</th>
<th>Switzerland</th>
<th>Poland</th>
<th>Norway</th>
<th>Ireland</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide 7699-43-6</td>
<td>TWA: 5 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 10 mg/m³</td>
<td>TWA: 5 mg/m³</td>
<td>STEL: 5 mg/m³</td>
</tr>
</tbody>
</table>

Derived No Effect Level (DNEL)
No DNELs are available for this product

Predicted No Effect Concentration (PNEC)
No PNECs are available for this product.

8.2. Exposure controls

Engineering Controls
Avoid generation of uncontrolled particles. Local exhaust ventilation during processing is recommended.

Personal protective equipment

Eye/face protection
If a risk of eye injury or irritation is present, appropriate eye protection is recommended; for example, tight-fitting goggles, foam-lined safety glasses, face shield, or other protective equipment that shields the eyes.

Skin and body protection
Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Respiratory protection
When particulates/fumes/gases are generated and if exposure limits are exceeded or irritation is experienced, proper approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminate concentrations. Respiratory protection must be provided in accordance with current local regulations.

Environmental exposure controls
Section 6: ACCIDENTAL RELEASE MEASURES.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>crystalline Powder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colour</td>
<td>white</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odour</td>
<td>Pungent, Slight chlorine</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odour threshold</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td>Melting point / freezing point</td>
<td>- °C / - °F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling point / boiling range</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Flash point** -

**Evaporation rate** - Not applicable

**Flammability (solid, gas)** - Not flammable

**Flammability Limit in Air**
- **Upper flammability limit:** -
- **Lower flammability limit:** -

**Vapour pressure** -

**Vapour density** -

**Specific Gravity** 1.5

**Water solubility** 960 g/L

**Molecular weight** 178.129

**VOC Content (%)** Not applicable

**Density** -

**Bulk density** 30-40 lb/ft³

### Section 10: STABILITY AND REACTIVITY

#### 10.1. Reactivity

Reacts with water.

#### 10.2. Chemical stability

Stable under normal conditions.

**Explosion data**
- Sensitivity to Mechanical Impact: None.
- Sensitivity to Static Discharge: None.

#### 10.3. Possibility of hazardous reactions

**Hazardous polymerisation**
Hazardous polymerisation does not occur.

**Possibility of Hazardous Reactions**
Reacts with water.

#### 10.4. Conditions to avoid

Dust formation and dust accumulation. Unintentional contact with water.

#### 10.5. Incompatible materials

Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics. Reacts with metals to produce heat and corrosive gases.

#### 10.6. Hazardous decomposition products

Reacts with water to produce hydrogen chloride gas or hydrochloric acid and heat.

---

**Section 11: TOXICOLOGICAL INFORMATION**

**Flash point** -

**Evaporation rate** -

**Flammability (solid, gas)** -

**Flammability Limit in Air**
- Upper flammability limit: -
- Lower flammability limit: -

**Vapour pressure** -

**Vapour density** -

**Specific Gravity** 1.5

**Water solubility** 960 g/L

**Molecular weight** 178.129

**VOC Content (%)** Not applicable

**Density** -

**Bulk density** 30-40 lb/ft³
11.1. Information on toxicological effects

Product Information

- Inhalation: Product not classified.
- Eye contact: Causes severe eye damage.
- Skin Contact: Causes severe skin burns.
- Ingestion: Harmful if swallowed.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide</td>
<td>3500 mg/kg bw</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on toxicological effects

Symptoms: May cause skin burns. May cause severe upper respiratory irritation if inhaled. May cause acute gastrointestinal effects if swallowed. May cause burning sensation or redness in the eyes.

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

- Acute toxicity: Harmful if swallowed.
- Skin corrosion/irritation: Causes severe burns.
- Serious eye damage/eye irritation: Causes severe eye damage.
- Sensitisation: Product not classified.
- Germ cell mutagenicity: Product not classified.
- Carcinogenicity: Product not classified.
- Reproductive toxicity: Product not classified.
- STOT - single exposure: Product not classified.
- STOT - repeated exposure: Product not classified.
- Aspiration hazard: Product not classified.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

This product as shipped is not classified for aquatic toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Algae/aquatic plants</th>
<th>Fish</th>
<th>Toxicity to microorganisms</th>
<th>Crustacea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide</td>
<td>The 72 h EC50 of zirconium dichloride oxide to Pseudokirchnerella subcapitata was 80% v/v saturated solution.</td>
<td>The 96 h LC50 of zirconium dioxide to Danio rerio was greater than 100 mg/L.</td>
<td>The 3 h EC50 of anhydrous zirconium acetate for activated sludge was greater than 1000 mg/L.</td>
<td>The 48 h EC50 of zirconium dichloride oxide to Daphnia magna was greater than 100% v/v saturated solution.</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

12.3. Bioaccumulative potential

...
12.4. Mobility in soil

12.5. Results of PBT and vPvB assessment

The PBT and vPvB criteria do not apply to inorganic substances.

12.6. Other adverse effects

---

**Section 13: DISPOSAL CONSIDERATIONS**

13.1. Waste treatment methods

- **Waste from residues/unused products**: Disposal should be in accordance with applicable regional, national and local laws and regulations.
- **Contaminated packaging**: Disposal should be in accordance with applicable regional, national and local laws and regulations.

---

**Section 14: TRANSPORT INFORMATION**

**IMDG**

14.1 UN/ID no 1759
14.2 Proper shipping name Corrosive solid, n.o.s. (Zirconium Oxychloride)
14.3 Hazard Class 8
14.4 Packing Group II
14.5 Marine pollutant Not applicable
14.6 Special Provisions 128, IB8, IP2, IP4, T3, TP33
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code Not applicable

**RID**

14.1 UN/ID no 1759
14.2 Proper shipping name Corrosive solid, n.o.s. (Zirconium Oxychloride)
14.3 Hazard Class 8
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions 128, IB8, IP2, IP4, T3, TP33

**ADR**

14.1 UN/ID no 1759
14.2 Proper shipping name Corrosive solid, n.o.s. (Zirconium Oxychloride)
14.3 Hazard Class 8
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions 128, IB8, IP2, IP4, T3, TP33

**ICAO (air)**

14.1 UN/ID no 1759
14.2 Proper shipping name Corrosive solid, n.o.s. (Zirconium Oxychloride)
14.3 Hazard Class 8
14.4 Packing Group II
14.5 Environmental hazard Not applicable
14.6 Special Provisions 128, IB8, IP2, IP4, T3, TP33

**IATA**

14.1 UN/ID no 1759
14.2 Proper shipping name Corrosive solid, n.os. (Zirconium Oxychloride)
14.3 Hazard Class 8
14.4 Packing Group II
Description Not applicable
14.5 Environmental hazard Not applicable
14.6 Special Provisions 128, IB8, IP2, IP4, T3, 171
TP33 ERG Code

Section 15: REGULATORY INFORMATION

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

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>French RG number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zirconium Dichloride Oxide</td>
<td>7699-43-6</td>
<td>-</td>
</tr>
</tbody>
</table>

European Union
Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Authorisations and/or restrictions on use:
This product does not contain substances subject to authorisation (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

International Inventories
- DSL/NDSL Complies
- EINECS/ELINCS Complies
- ENCS Complies
- IECSC Complies
- KECL Complies
- PICCS Complies
- AICS Complies

Legend:
- TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
- DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
- EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
- ENCS - Japan Existing and New Chemical Substances
- IECSC - China Inventory of Existing Chemical Substances
- KECL - Korean Existing and Evaluated Chemical Substances
- PICCS - Philippines Inventory of Chemicals and Chemical Substances
- AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

No chemical safety assessment has been performed for this product.

Section 16: OTHER INFORMATION

Issue Date 06-Apr-2017
Revision Date 13-Aug-2019
Revision Note SDS sections updated: 2, 4, 5, 7, 8, 9, 10, 16.

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006

Note:
The information provided in this Material 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.

Additional information available from:

Safety data sheets and labels available at ATImetals.com

End of Safety Data Sheet