# SAFETY DATA SHEET

**Issue Date** 01-Feb-2025 **Revision Date** 01-Feb-2025 **Version** 1

## Section 1: PRODUCT AND COMPANY IDENTIFICATION

**Product identifier**
**Product Name** Zirconium Raffinate
**Product Code** SAC072

**Other means of identification**
**UN/ID No.** 1760
**Synonyms** Zirconium Raffinate

**Registration Number(s)**

**Recommended use of the chemical and restrictions on use**
**Recommended Use** Chemical intermediate

**Uses advised against**

**Details of the supplier of the safety data sheet**
**Manufacturer**
ATI Specialty Alloys & Components, 1600 Old Salem Rd NE, Albany, OR 97321 USA ATI SDS Manager: +1-412-225-4911
**Emergency telephone number**
**Emergency Telephone** Chemtrec +1 703-741-5970

## Section 2: HAZARDS IDENTIFICATION

**Classification of the substance or mixture**

| | |
|---|---|
| Corrosive to metals | Category 1 |
| Skin corrosion/irritation | Category 1B |
| Serious eye damage/eye irritation | Category 1 |

**Label elements**

**Emergency Overview**

**Signal word** Danger

**Hazard statements**
H290 - May be corrosive to metals
H314 - Causes severe skin burns and eye damage
H318 - Causes serious eye damage

**Appearance** Liquid **Physical state** Liquid **Odor** Slightly acidic

**Precautionary Statements - Prevention**
• Do not breathe gas/mist/vapor/spray
• Wear protective gloves/protective clothing/eye protection/face protection
**Precautionary Statements - Response**

• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
IF ON SKIN (or hair): Rinse cautiously with water for several minutes. 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 SWALLOWED: Rinse mouth. DO NOT induce vomiting. • Immediately call a POISON CENTER or doctor/physician
• Wash contaminated clothing before reuse
• Absorb spillage to prevent material damage

**Precautionary Statements - Storage**

• Store in corrosion-resistant container

**Precautionary Statements - Disposal**

• Dispose of contents/container to an approved waste disposal plant

**Other Information**

Other hazards Harmful if swallowed

Hazards not otherwise classified (HNOC)

• Not applicable

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

**Synonyms** Zirconium Raffinate

| Chemical Name | Weight-% | ENCS | ISHL No. | CAS No. |
|---|---|---|---|---|
| Water<br>7732-18-5 | 65 - 66 | - | - | 7732-18-5 |
| Zirconium Dichloride Oxide<br>7699-43-6 | 21 - 22 | X | - | 7699-43-6 |
| Ammonium Chloride<br>12125-02-9 | 9 - 10 | X | - | 12125-02-9 |
| Hydrochloric Acid<br>7647-01-0 | 2 - 3 | - | - | 7647-01-0 |

| Chemical Name | Poisonous and Deleterious Substances Control Law |
|---|---|
| Water<br>7732-18-5 | - |
| Zirconium Dichloride Oxide<br>7699-43-6 | - |
| Ammonium Chloride<br>12125-02-9 | - |
| Hydrochloric Acid<br>7647-01-0 | - |

| Chemical Name | Class 1 | Class 2 |
|---|---|---|
| Water<br>7732-18-5 | - | - |
| Zirconium Dichloride Oxide<br>7699-43-6 | 307 | - |
| Ammonium Chloride<br>12125-02-9 | - | - |
| Hydrochloric Acid<br>7647-01-0 | - | - |

## Section 4: FIRST AID MEASURES

**Inhalation** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician or poison control center immediately.

**Skin Contact** Wash off immediately with plenty of water. 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. |
| **Symptoms** | May cause acute gastrointestinal effects if swallowed. Contact with skin may cause skin burns. May cause breathing difficulties if inhaled. |
| **Inhalation** | May be harmful if inhaled. |
| **Skin Contact** | Causes severe skin burns. |
| **Eye contact** | Causes severe eye damage. |
| **Ingestion** | Harmful if swallowed. |
| **Note to physicians** | Treat symptomatically. |

## Section 5: FIRE FIGHTING MEASURES

| | |
|---|---|
| **Flammable properties** | Non-combustible. |
| **Explosive properties** | Not applicable. |
| **Suitable extinguishing media** | Non-combustible. |
| **Unsuitable extinguishing media** | Non-combustible. |
| **Specific hazards arising from the chemical** | Non-combustible. |
| **Hazardous combustion products** | Hydrogen chloride gas may cause respiratory and/or eye irritation. |
| **Special protective equipment for fire-fighters** | Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. |

## Section 6: ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| **Personal precautions** | Use personal protective equipment as required. |
| **For emergency responders** | Use personal protective equipment as required. Follow Emergency Response Guidebook, Guide No. 154. |
| **Environmental precautions** | Collect spillage to prevent release to the environment. |
| **Methods for containment** | Prevent further leakage or spillage if safe to do so. |
| **Methods for cleaning up** | Wash the spill location thoroughly with water. Respiratory protection may be needed. Skin and eye protection should be used during cleanup. |

## Section 7: HANDLING AND STORAGE

**Handling**

| | |
|---|---|
| **Advice on safe handling** | Handle in accordance with good industrial hygiene and safety practice. Ensure adequate ventilation, especially in confined areas. |

**Storage**

| | |
|---|---|
| **Storage Conditions** | Keep in properly labeled containers. Keep in a dry, cool and well-ventilated place. Protect from direct sunlight. Keep in corrosion resistant containers. Containers may become pressurized. Handle and open container with care. |

**Incompatible materials** Alcohols, phenols, and amines. Rubber, coatings, and some plastics.

## Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

**Exposure Guidelines** This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies

| Chemical Name | Japan | ISHL Working Environmental Evaluation Standards - Administrative Control Levels | ACGIH TLV |
|---|---|---|---|
| Water<br>7732-18-5 | - | - | - |
| Zirconium Dichloride Oxide<br>7699-43-6 | - | - | STEL: 10 mg/m³ Zr<br>TWA: 5 mg/m³ Zr |
| Ammonium Chloride<br>12125-02-9 | - | - | STEL: 20 mg/m³ fume<br>TWA: 10 mg/m³ fume |
| Hydrochloric Acid<br>7647-01-0 | - | - | - |

**Engineering Controls** Avoid generation of uncontrolled mist.

**Personal Protective Equipment**

**Respiratory protection** When gases/mists/vapors 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 contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

**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.

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

## Section 9: PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---|---|---|---|
| **Physical state** | Liquid | | |
| **Appearance** | Liquid | **Odor** | Slightly acidic |
| **Color** | clear | **Odor threshold** | - |

| Property | Values | Remarks • Method |
|---|---|---|
| **pH** | <1 | |
| **Melting point / freezing point** | - / - | |
| **Boiling point / boiling range** | - | |
| **Flash point** | - | |
| **Evaporation rate** | - | |
| **Flammability (solid, gas)** | - | Not flammable |
| **Flammability Limit in Air** | | |
| **Upper flammability limit:** | - | |
| **Lower flammability limit:** | - | |
| **Vapor pressure** | - | Not applicable |
| **Vapor density** | - | Not applicable |
| **Specific Gravity** | 1.18 | |
| **Water solubility** | - | |
| **Solubility(ies)** | | - |
| **Partition coefficient** | - | Not applicable |
| **Autoignition temperature** | - | Not applicable |
| **Decomposition temperature** | - | |
| **Kinematic viscosity** | - | Not applicable |

| | | |
|---|---|---|
| **Dynamic viscosity** | - | Not applicable |
| **Explosive properties** | Not applicable | |
| **Oxidizing properties** | Not applicable | |
| **Softening point** | - | |
| **Molecular weight** | - | |
| **VOC Content (%)** | Not applicable | |
| **Density** | - | |
| **Bulk density** | - | |

## Section 10: STABILITY AND REACTIVITY

**Reactivity**
Not applicable

**Stability** Stable under normal conditions.

Explosion data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

**Possibility of Hazardous Reactions** None under normal processing

**Hazardous polymerization** Hazardous polymerization does not occur

**Conditions to avoid** To avoid thermal decomposition, do not overheat

**Incompatible materials** Alcohols, phenols, and amines. Rubber, coatings, and some plastics

**Hazardous Decomposition Products** Thermal decomposition produces hydrogen chloride gas

## Section 11: TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

**Product Information**

**Inhalation** May be harmful if inhaled.

**Eye contact** Causes severe eye damage.

**Skin Contact** Causes severe skin burns.

**Ingestion** Harmful if swallowed.

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---|---|---|---|
| Water<br>7732-18-5 | - | - | - |
| Zirconium Dichloride Oxide<br>7699-43-6 | 3500 mg/kg bw | - | - |
| Ammonium Chloride<br>12125-02-9 | 1410 mg/kg bw | >2000 mg/kg bw | - |
| Hydrochloric Acid<br>7647-01-0 | - | - | 8.3 mg/L |

**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.

**Acute toxicity**

**Numerical measures of toxicity - Product Information**

**Numerical measures of toxicity - Component Information**

| Chemical Name | Oral LD50 | Dermal LD50 | Inhalation LC50 |
|---|---|---|---|
| Water | - | - | - |
| Zirconium Dichloride Oxide | 3500 mg/kg bw | - | - |
| Ammonium Chloride | 1410 mg/kg bw | >2000 mg/kg bw | - |
| Hydrochloric Acid | - | - | 8.3 mg/L |

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

**Skin corrosion/irritation** Causes severe skin burns.

**Serious eye damage/eye irritation** Causes severe eye damage.

**Sensitization** Product not classified.

**Germ cell mutagenicity** Product not classified.

**Carcinogenicity** Product not classified.

| Chemical Name | Japan | IARC |
|---|---|---|
| Water<br>7732-18-5 | | - |
| Zirconium Dichloride Oxide<br>7699-43-6 | | - |
| Ammonium Chloride<br>12125-02-9 | | - |
| Hydrochloric Acid<br>7647-01-0 | | - |

**Reproductive toxicity** Product not classified.

**STOT - single exposure** Product not classified.

**STOT - repeated exposure** Product not classified.

**Target Organ Effects**

**Aspiration hazard** Product not classified.

## Section 12: ECOLOGICAL INFORMATION

**Ecotoxicity**

This product as shipped is not classified for aquatic toxicity.

| Chemical Name | Algae/aquatic plants | Fish | Toxicity to microorganisms | Crustacea |
|---|---|---|---|---|
| Water | - | - | - | - |
| Zirconium Dichloride Oxide | *The 72 h EC50 of zirconium dichloride oxide to Pseudokirchnerella* | *The 96 h LC50 of zirconium dioxide to Danio rerio was greater than 100 mg/L.* | The 3 h EC50 of anhydrous zirconium acetate for activated sludge was greater than | *The 48 h EC50 of zirconium dichloride oxide to Daphnia magna was greater* |

| | | | | |
|---|---|---|---|---|
| | *subcapitata was 80% v/v saturated solution.* | | 1000 mg/L. | *than 100% v/v saturated solution.* |
| Ammonium Chloride | *The 10d EC50 of Ammonium chloride to Navicula sp. was 90.4 mg/L.* | *The 96 h LC50 of Ammonium chloride to Cyprinus carpio was 209 mg/L .* | The 30 min EC50 of Ammonium chloride for activated sludge was 1618 mg/L. | *The 48-hr EC50 (survival) for Daphnia magna exposed to Ammonium chloride was 101 mg/L.* |
| Hydrochloric Acid | *The 72 hour EC50 of HCl in water to Chlorella vulgaris was pH 4.82* | *The 96 hour LC50 of HCl in water to Lepomis macrochirus was between pH 3.5 and 3.25.* | The 3 h EC50 of HCl in water for activated sludge was between pH 5.0 and 5.5. | *The 48 h EC50 of HCl in water to Daphnia magna was pH 4.92.* |

**Persistence and degradability**

**Bioaccumulation**

**Mobility**

**Other adverse effects**

| Chemical Name | EU - Endocrine Disrupters Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Endocrine disrupting potential |
|---|---|---|---|
| Water | - | - | - |
| Zirconium Dichloride Oxide | - | - | - |
| Ammonium Chloride | - | - | - |
| Hydrochloric Acid | - | - | - |

## Section 13: DISPOSAL CONSIDERATIONS

**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**

**Proper shipping name** Corrosive liquid, n.o.s. (Zirconium raffinate)
**Hazard Class** 8
**UN/ID No.** 1760
**Packing Group** II
**EmS-No** 154
**Special Provisions** B2, IB2, T11, TP2, TP27

**ICAO (air)**

**UN/ID No.** 1760
**Proper shipping name** Corrosive liquid, n.o.s. (Zirconium raffinate)
**Hazard Class** 8
**Packing Group** II
**Special Provisions** B2, IB2, T11, TP2, TP27

**ADR**

**UN/ID No.** 1760
**Proper shipping name** Corrosive liquid, n.o.s. (Zirconium raffinate)
**Hazard Class** 8
**Packing Group** II
**ERG Code** 154

**Special Provisions** B2, IB2, T11, TP2, TP27

**IATA**

**UN/ID No.** 1760
**Proper shipping name** Corrosive liquid, n.o.s. (Zirconium raffinate)
**Hazard Class** 8
**Packing Group** II
**Special Provisions** B2, IB2, T11, TP2, TP27

Japan

UN Number 1760
Proper shipping name Corrosive liquid, n.o.s. (Zirconium raffinate)
Hazard Class 8
Packing Group II
Special Provisions B2, IB2, T11, TP2, TP27

## Section 15: REGULATORY INFORMATION

**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

| Chemical Name | Dangerous Substances | organic solvents | Harmful Substances Whose Names Are to be Indicated on the Label | ISHL - Prevention of Hazards Due to Specified Chemical Substances (Class 2) | Prevention of Lead Poisoning |
|---|---|---|---|---|---|
| Water<br>7732-18-5 | Not applicable | Not applicable | Not applicable | - | - |
| Zirconium Dichloride Oxide<br>7699-43-6 | >=1 % | Not applicable | X | - | - |
| Ammonium Chloride<br>12125-02-9 | >0.1 % | Not applicable | Not applicable | - | - |
| Hydrochloric Acid<br>7647-01-0 | Not applicable | Not applicable | Not applicable | - | - |

| Chemical Name | Class 2 | Class 1 | Poisonous and Deleterious Substances Control Law | Fire Service Law: |
|---|---|---|---|---|
| Water<br>7732-18-5 | - | - | Not applicable | Class 2 |
| Zirconium Dichloride Oxide<br>7699-43-6 | - | 307 | Not applicable | Class 2 |
| Ammonium Chloride<br>12125-02-9 | - | - | Not applicable | Class 2 |
| Hydrochloric Acid | - | - | Not applicable | Class 2 |

| | | | | |
|---|---|---|---|---|
| 7647-01-0 | | | | |

**Fire Service Law:** -

## Section 16: OTHER INFORMATION

**Prepared By**

**Issue Date** 01-Feb-2025

**Revision Date** 01-Feb-2025

**Revision Note** Updated to comply with GHS.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

**Note:**
This SDS complies with the requirements of JIS Z 7250:2010 and JIS Z 7252:2009 (Japan)
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 Safety Data Sheet**

**Additional information available from:** Safety data sheets and labels available at ATImaterials.com