SAFETY DATA SHEET

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

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

1.1. Product identifier

Product Code SAC072
Product Name Zirconium Raffinate

UN/ID no 1760
Synonyms Zirconium Raffinate

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 Specialty Alloys & Components, 1600 Old Salem Rd NE, Albany, OR 97321 USA

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Contact Point ATI SDS Manager: +1-412-225-4911

1.4. Emergency telephone number

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

Section 2: HAZARDS IDENTIFICATION

This material is classified per Regulation (EC) No 1272/2008.

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Skin corrosion/irritation	Category 1B
Serious eye damage/eye irritation	Category 1
May be corrosive to metals	Category 1

2.2. Label elements

Emergency Overview

Danger

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

Appearance Liquid **Physical state** Liquid **Odour** Slightly acidic

Precautionary Statements - Prevention
Do not breathe gas/mist/vapours/spray
Wear protective gloves/protective clothing/eye protection/face 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): 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 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 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
Harmful if swallowed

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Synonyms Zirconium Raffinate.

Chemical Name	EC No	CAS No	Weight-%
Water	231-791-2	7732-18-5	65 - 66
Zirconium Dichloride Oxide	231-717-9	7699-43-6	21 - 22
Ammonium Chloride	235-186-4	12125-02-9	9 - 10
Hydrochloric Acid	231-595-7	7647-01-0	2 - 3

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 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.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms May cause acute gastrointestinal effects if swallowed. Contact with 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

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. 154.

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 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. Ensure adequate ventilation, especially in confined areas.

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

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions
Keep in properly labelled 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.

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

Chemical Name	European Union	United Kingdom	France	Spain	Germany
Water 7732-18-5	-	-	-	-	-
Zirconium Dichloride Oxide 7699-43-6	-	TWA: 5 mg/m³	-	STEL: 10 mg/m³ TWA: 5 mg/m³	-
Ammonium Chloride 12125-02-9	-	STEL: 20 mg/m³ TWA: 10 mg/m³	TWA: 10 mg/m³	STEL: 20 mg/m³ TWA: 10 mg/m³	-
Hydrochloric Acid 7647-01-0	-	-	-	-	-

Chemical Name	Italy	Portugal	Netherlands	Finland	Denmark
Water 7732-18-5	-	-	-	-	-
Zirconium Dichloride Oxide 7699-43-6	-	STEL: 10 mg/m³ TWA: 5 mg/m³	-	TWA: 1 mg/m³	TWA: 5 mg/m³
Ammonium Chloride 12125-02-9	-	STEL: 20 mg/m³ TWA: 10 mg/m³	-	-	TWA: 10 mg/m³
Hydrochloric Acid 7647-01-0	-	-	-	-	-

Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Water 7732-18-5	-	-	-	-	-
Zirconium Dichloride Oxide 7699-43-6	TWA: 5 mg/m³	TWA: 5 mg/m³	STEL: 10 mg/m³ TWA: 5 mg/m³	TWA: 5 mg/m³ STEL: 5 mg/m³	TWA: 5 mg/m³ STEL: 10 mg/m³
Ammonium Chloride 12125-02-9	-	TWA: 3 mg/m³	STEL: 20 mg/m³ TWA: 10 mg/m³	TWA: 10 mg/m³ STEL: 20 mg/m³	TWA: 10 mg/m³ STEL: 20 mg/m³
Hydrochloric Acid 7647-01-0	-	-	-	-	-

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

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

8.2. Exposure controls

Engineering Controls Avoid generation of uncontrolled mist.

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 gases/mists/vapours 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.

Environmental exposure controls Section 6: ACCIDENTAL RELEASE MEASURES.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state	Liquid		
Appearance	Liquid	**Odour**	Slightly acidic
Colour	clear	**Odour 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		-
Vapour pressure	-	Not applicable
Vapour 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	
Oxidising properties	Not applicable	

9.2. Other information

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	-

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Not applicable

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
None under normal processing.

10.4. Conditions to avoid

To avoid thermal decomposition, do not overheat.

10.5. Incompatible materials

Alcohols, phenols, and amines. Rubber, coatings, and some plastics.

10.6. Hazardous decomposition products

Thermal decomposition produces hydrogen chloride gas.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

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	-	-	-
Zirconium Dichloride Oxide	3500 mg/kg bw	-	-
Ammonium Chloride	1410 mg/kg bw	>2000 mg/kg bw	-
Hydrochloric Acid	-	-	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.

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 skin 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.

Target Organ Effects

Aspiration hazard Product not classified.

Section 12: ECOLOGICAL INFORMATION

12.1. Toxicity

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 subcapitata was 80% v/v saturated solution.	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 1000 mg/L.	The 48 h EC50 of zirconium dichloride oxide to Daphnia magna was greater 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.

12.2. Persistence and degradability

12.3. Bioaccumulative potential

12.4. Mobility in soil

Mobility

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	1760
14.2 Proper shipping name	Corrosive liquid, n.o.s. (Zirconium raffinate)
14.3 Hazard Class	8
14.4 Packing Group	II
14.5 Marine pollutant	Not applicable
14.6 Special Provisions	B2, IB2, T11, TP2, TP27
EmS-No	154
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code	Not applicable

RID

14.1 UN/ID no	1760
14.2 Proper shipping name	Corrosive liquid, n.o.s. (Zirconium raffinate)
14.3 Hazard Class	8
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	B2, IB2, T11, TP2, TP27

ADR

14.1 UN/ID no	1760
14.2 Proper shipping name	Corrosive liquid, n.o.s. (Zirconium raffinate)
14.3 Hazard Class	8
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	B2, IB2, T11, TP2, TP27

ICAO (air)

14.1 UN/ID no	1760
14.2 Proper shipping name	Corrosive liquid, n.o.s. (Zirconium Raffinate)
14.3 Hazard Class	8
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	B2, IB2, T11, TP2, TP27

IATA

14.1 UN/ID no	1760
14.2 Proper shipping name	Corrosive liquid, n.o.s. (Zirconium raffinate)
14.3 Hazard Class	8
14.4 Packing Group	II
Description	-
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	B2, IB2, T11, TP2, TP27 154
	ERG Code

Section 15: REGULATORY INFORMATION

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

Chemical Name	French RG number	Title
Water 7732-18-5	-	-

Zirconium Dichloride Oxide 7699-43-6	-	-
Ammonium Chloride 12125-02-9	-	-
Hydrochloric Acid 7647-01-0	-	-

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

Prepared By

Issue Date 01-Feb-2025

Revision Date 01-Feb-2025

Revision Note Updated to comply with GHS.

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.

End of Safety Data Sheet

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