



SAFETY DATA SHEET

Issue Date 28-May-2015

Revision Date 22-Apr-2025

Version 6

Section 1: PRODUCT AND COMPANY IDENTIFICATION

Product identifier

Product Name Zirconium Oxide
Product Code SAC018

Other means of identification

Synonyms Zirconium Oxide: All anhydrous Zirconium Dioxide products, All grades of zirconium oxide, including spectrographic grade, jet milled, reactor grade (Product #304)

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

Not a hazardous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Emergency Overview

Hazard statements

Appearance Powder	Physical state Solid	Odor Odorless
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Precautionary Statements - Prevention

Precautionary Statements - Response

Precautionary Statements - Storage

Precautionary Statements - Disposal

Other Information

Hazards not otherwise classified (HNOC)

- Not applicable

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Zirconium Oxide: All anhydrous Zirconium Dioxide products, All grades of zirconium oxide, including spectrographic grade, jet milled, reactor grade (Product #304)

Chemical Name	Weight-%	ENCS	ISHL No.	CAS No.
Zirconium Dioxide 1314-23-4	>99	X	-	1314-23-4

Chemical Name	Poisonous and Deleterious Substances Control Law		
Zirconium Dioxide 1314-23-4	-		
Chemical Name	Class 1	Class 2	
Zirconium Dioxide 1314-23-4	-	-	

Section 4: FIRST AID MEASURES

Inhalation	If excessive amounts of smoke, fume, or particulate are inhaled during processing, remove to fresh air and consult a qualified health professional.
Skin Contact	None under normal use conditions.
Eye contact	In the case of particles coming in contact with eyes during processing, treat as with any foreign object.
Ingestion	IF SWALLOWED. Call a POISON CENTER or doctor/physician if you feel unwell.
Symptoms	None anticipated.
Inhalation	Product not classified.
Skin Contact	Product not classified.
Eye contact	Product not classified.
Ingestion	Product not classified.
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 Not applicable.

Special protective equipment for fire-fighters	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.
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Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions	Use personal protective equipment as required.
For emergency responders	Use personal protective equipment as required.
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	Sweep or shovel material into dry containers. Avoid creating uncontrolled dust.

Section 7: HANDLING AND STORAGE

Handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice.

Storage

Storage Conditions Keep in properly labeled containers.

Incompatible materials None known.

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
Zirconium Dioxide 1314-23-4	-	-	STEL: 10 mg/m ³ Zr TWA: 5 mg/m ³ Zr

Engineering Controls Avoid generation of uncontrolled particles.

Personal Protective Equipment

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 contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

Eye/face protection

When airborne particles may be present, appropriate eye protection is recommended. For example, tight-fitting goggles, foam-lined safety glasses or other protective equipment that shield the eyes from particles.

Skin and body protection

Wear protective gloves.

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

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Solid	Odor	Odorless
Appearance	Powder	Odor threshold	Not applicable
Color	white		
Property	Values	Remarks • Method	
pH	-	Not applicable	
Melting point / freezing point	2710 °C / 4910 °F		
Boiling point / boiling range	4300 °C / 7770 °F		
Flash point	-	Not applicable	
Evaporation rate	-	Not applicable	
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	5.6		

Water solubility	-	
Solubility(ies)	-	
Partition coefficient	-	Not applicable
Autoignition temperature	-	Not applicable
Decomposition temperature	-	Not applicable
Kinematic viscosity	-	Not applicable
Dynamic viscosity	-	Not applicable
Explosive properties	Not applicable	
Oxidizing properties	Not applicable	
Softening point	-	
Molecular weight	123.2	
VOC Content (%)	Not applicable	
Density	-	
Bulk density	110-130 lb/ft3	

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 Dust formation and dust accumulation

Incompatible materials None known

Hazardous Decomposition Products Not applicable

Section 11: TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation Product not classified.

Eye contact Product not classified.

Skin Contact Product not classified.

Ingestion Product not classified.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Zirconium Dioxide 1314-23-4	>5000 mg/kg bw	-	>4.3 mg/L

Information on toxicological effects

Symptoms None known.

Acute toxicity

Numerical measures of toxicity - Product Information

Numerical measures of toxicity - Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Zirconium Dioxide	>5000 mg/kg bw	-	>4.3 mg/L

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

Skin corrosion/irritation Product not classified.

Serious eye damage/eye irritation Product not classified.

Sensitization Product not classified.

Germ cell mutagenicity Product not classified.

Carcinogenicity Product not classified.

Chemical Name	Japan	IARC
Zirconium Dioxide 1314-23-4		-

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
Zirconium Dioxide	<i>The 15 d NOEC of zirconium dichloride oxide to Chlorella vulgaris was greater than 200 mg/L</i>	<i>The 96 h LL50 of zirconium dioxide to Danio rerio was greater than 100 mg/L.</i>	-	<i>The 48 h EC50 of zirconium dioxide to Daphnia magna was greater than 100 mg/L</i>

Persistence and degradability**Bioaccumulation****Mobility**Other adverse effects

Chemical Name	EU - Endocrine Disruptors	EU - Endocrine Disruptors -	Endocrine disrupting potential
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	Candidate List	Evaluated Substances	
Zirconium Dioxide	-	-	-

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	Not regulated
ICAO (air)	Not regulated
ADR	Not regulated
IATA Japan	Not regulated

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
Zirconium Dioxide 1314-23-4	>1 %	Not applicable	Not applicable	-	-

Chemical Name	Class 2	Class 1	Poisonous and Deleterious Substances Control Law	Fire Service Law:
Zirconium Dioxide 1314-23-4	-	-	Not applicable	Class 2

Fire Service Law: -

Section 16: OTHER INFORMATION**Prepared By****Issue Date** 28-May-2015**Revision Date** 22-Apr-2025**Revision Note** SDS sections updated: 1, 9.**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