



SAFETY DATA SHEET

Issue Date 28-May-2015

Revision Date 18-Dec-2015

Version 1

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name Zirconium Oxide

Other means of identification

Product Code SAC018

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

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 Address

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

Emergency telephone number

Emergency Telephone Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Label elements

Emergency Overview

Appearance Powder

Physical state Powder

Odor Odorless

Hazards not otherwise classified (HNOC)

Not applicable

Other Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

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

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

4. FIRST AID MEASURES

First aid measures

Eye contact	In the case of particles coming in contact with eyes during processing, treat as with any foreign object.
Skin Contact	None under normal use conditions.
Inhalation	If excessive amounts of vapors, smoke, fume, or particles are inhaled during processing, remove to fresh air and consult a qualified health professional.
Ingestion	IF SWALLOWED. Call a POISON CENTER or doctor/physician if you feel unwell.
Self-protection of the first aider	Use personal protective equipment as required.

Most important symptoms and effects, both acute and delayed

Symptoms	None anticipated.
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Indication of any immediate medical attention and special treatment needed

Note to physicians	Treat symptomatically.
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5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Non-combustible.

Unsuitable extinguishing media Non-combustible.

Specific hazards arising from the chemical

Non-combustible.

Hazardous combustion products Not applicable.

Explosion data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge None.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH approved (or equivalent) respirator and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions	Use personal protective equipment as required.
For emergency responders	Use personal protective equipment as required.

Environmental precautions

Environmental precautions	See section 12 for additional ecological information.
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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.

7. HANDLING AND STORAGE

Precautions for safe handling

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

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep in properly labeled containers.

Incompatible materials None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Chemical Name	ACGIH TLV	OSHA PEL
Zirconium Dioxide 1314-23-4	STEL: 10 mg/m ³ Zr TWA: 5 mg/m ³ Zr	TWA: 5 mg/m ³ Zr (vacated) STEL: 10 mg/m ³ Zr

Appropriate engineering controls

Engineering Controls Avoid generation of uncontrolled particles.

Individual protection measures, such as personal protective equipment

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.

Respiratory protection When particulates 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.

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical state	Powder	Odor	Odorless
Appearance	Powder	Odor threshold	Not applicable
Color	white		
Property	Values	Remarks • Method	
pH	-		
Melting point/freezing point	2710 °C / 4910 °F		
Boiling point / boiling range	-		
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	Insoluble		

Solubility in other solvents	-	
Partition coefficient	-	
Autoignition temperature	-	Not applicable
Decomposition temperature	-	Not applicable
Kinematic viscosity	-	Not applicable
Dynamic viscosity	-	Not applicable
Explosive properties	Not applicable	
Oxidizing properties	Not applicable	

Other Information

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	110-130 lb/ft3

10. STABILITY AND REACTIVITY**Reactivity**

Not applicable

Chemical stability

Stable under normal conditions.

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

None known.

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

Acute toxicity	Product not classified.
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.

Reproductive toxicity Product not classified.
 STOT - single exposure Product not classified.
 STOT - repeated exposure Product not classified.
 Aspiration hazard Product not classified.

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 1314-23-4	The 15 d NOEC of zirconium dichloride oxide to <i>Chlorella vulgaris</i> was greater than 200 mg/L	The 96 h LL50 of zirconium dioxide to <i>Danio rerio</i> was greater than 100 mg/L.	-	The 48 h EC50 of zirconium dioxide to <i>Daphnia magna</i> was greater than 100 mg/L

Other adverse effects

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal of wastes 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.

14. TRANSPORT INFORMATION

DOT Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA Complies
 DSL/NDL 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/NDL - 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

US 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

Acute health hazard	No
Chronic Health Hazard	No
Fire hazard	No
Sudden release of pressure hazard	No
Reactive Hazard	No

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

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

US State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Zirconium Dioxide 1314-23-4		X	

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	Health hazards 0	Flammability 0	Instability 0	Physical and Chemical Properties -
HMIS	Health hazards 1*	Flammability 0	Physical hazards 0	Personal protection X

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Revision Note

SDS sections updated: 11

Note:

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 ATImetals.com