



SAFETY DATA SHEET

Issue Date 28-May-2015

Revision Date 29-Jul-2020

Version 5

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, 1000 Six PPG Place, Pittsburgh, PA 15222 USA

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 |
|--------------------------|-----------------------------|----------------------|

Precautionary Statements - Prevention

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Precautionary Statements - Response

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Precautionary Statements - Storage

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Precautionary Statements - Disposal

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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. |

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 | - | |
| 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 | - | |
| VOC Content (%) | Not applicable | |
| Density | - | |
| Bulk density | 110-130 lb/ft ³ | |

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

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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 Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Endocrine disrupting potential |
|---------------|--|--|--------------------------------|
| | | | |

| | | | |
|-------------------|---|---|---|
| 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 | - | Not applicable | - |

Section 16: OTHER INFORMATION

Prepared By**Issue Date** 28-May-2015**Revision Date** 29-Jul-2020**Revision Note** SDS sections updated: 4, 5, 6, 9, 10, 16.**Key or legend to abbreviations and acronyms used in the safety data sheet**

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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 ATImetals.com