



# SAFETY DATA SHEET

Issue Date 14-Apr-2017

Revision Date 17-Dec-2019

Version 1

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

### 1.1. Product identifier

**Product Code** SAC029  
**Product Name** Zirconium Oxynitrate Solution

**UN/ID no** 3098  
**Synonyms** Zirconium Oxynitrate Solution; Zirconium Nitrate Oxide Solution, Zirconium Dinitrate Oxide Solution (Product #326)

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

### 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*

|                                   |             |
|-----------------------------------|-------------|
| Acute toxicity - Oral             | Category 4  |
| Skin corrosion/irritation         | Category 1B |
| Serious eye damage/eye irritation | Category 1  |
| Oxidising liquids                 | Category 2  |

### 2.2. Label elements

#### Emergency Overview

**Danger**

#### Hazard statements

H272 - May intensify fire; oxidiser  
H314 - Causes severe skin burns and eye damage  
H318 - Causes serious eye damage  
H302 - Harmful if swallowed

**Appearance** Liquid**Physical state** Liquid**Odour** Pungent; Slight nitric**Precautionary Statements - Prevention**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Store away from flammable substances, reducing agents, metal powders, and organic materials. Do not breathe gas/mist/vapours/spray. Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. 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. In case of fire: Use Water spray, fog or regular foam for extinction.

**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**

## Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

**3.1 Substances****Synonyms**

Zirconium Oxynitrate Solution: Zirconium Nitrate Oxide Solution, Zirconium Dinitrate Oxide Solution (Product #326).

| Chemical Name             | EC No     | CAS No     | Weight-% |
|---------------------------|-----------|------------|----------|
| Water                     | 231-791-2 | 7732-18-5  | 60       |
| Zirconium Dinitrate Oxide | 237-529-3 | 13826-66-9 | 40       |

## 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 soap and 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**

Material is a strong oxidizer but is itself not flammable. Water spray or fog is preferred; if water not available use dry chemical, CO<sub>2</sub> or regular foam.

#### **Unsuitable extinguishing media**

None

### **5.2. Special hazards arising from the substance or mixture**

This is a strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.

**Hazardous combustion products** Nitrogen oxide gases 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. 140.

### **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. This is a strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals. Keep away from all ignition sources including heat, sparks, and flame. Prevent dust accumulations to minimise combustible dust hazard.

**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 away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labelled containers. Keep in a dry, cool and well-ventilated place. Protect from direct sunlight. Containers may become pressurized. Handle and open container with care. Keep in corrosion resistant containers. Store away from flammable substances, reducing agents, metal powders, and organic materials.

**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<br>7732-18-5                      | -                        | -  | -  | -  | -  |
| Zirconium Dinitrate Oxide<br>13826-66-9 | -                        | TWA: 5 mg/m <sup>3</sup>                               | -  | STEL: 10 mg/m <sup>3</sup><br>TWA: 5 mg/m <sup>3</sup> | -  |
| Chemical Name                           | Italy                    | Portugal   | Netherlands  | Finland  | Denmark  |
| Water<br>7732-18-5                      | -                        | -  | -  | -  | -  |
| Zirconium Dinitrate Oxide<br>13826-66-9 | -                        | STEL: 10 mg/m <sup>3</sup><br>TWA: 5 mg/m <sup>3</sup> | -  | TWA: 1 mg/m <sup>3</sup>                               | TWA: 5 mg/m <sup>3</sup>                               |
| Chemical Name                           | Austria                  | Switzerland  | Poland   | Norway   | Ireland  |
| Water<br>7732-18-5                      | -                        | -  | -  | -  | -  |
| Zirconium Dinitrate Oxide<br>13826-66-9 | TWA: 5 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup>                               | STEL: 10 mg/m <sup>3</sup><br>TWA: 5 mg/m <sup>3</sup> | TWA: 5 mg/m <sup>3</sup><br>STEL: 5 mg/m <sup>3</sup>  | TWA: 5 mg/m <sup>3</sup><br>STEL: 10 mg/m <sup>3</sup> |

**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

|                       |                    |                        |                        |
|-----------------------|--------------------|------------------------|------------------------|
| <b>Physical state</b> | Liquid             | <b>Odour</b>           | Pungent; Slight nitric |
| <b>Appearance</b>     | Liquid             | <b>Odour threshold</b> | -                      |
| <b>Colour</b>         | white, light brown |                        |                        |

| <u>Property</u>                       | <u>Values</u>   | <u>Remarks • Method</u> |
|---------------------------------------|---|-------------------------|
| <b>pH</b>                             | <1  |                         |
| <b>Melting point / freezing point</b> | -15 °C / 5 °F   |                         |
| <b>Boiling point / boiling range</b>  | 104 °C / 220 °F   |                         |
| <b>Flash point</b>                    | -   | Not applicable          |
| <b>Evaporation rate</b>               | -   |                         |
| <b>Flammability (solid, gas)</b>      | -   | Not flammable           |
| <b>Flammability Limit in Air</b>      |   |                         |
| <b>Upper flammability limit:</b>      | -   |                         |
| <b>Lower flammability limit</b>       | -   |                         |
| <b>Vapour pressure</b>                | -   | Not applicable          |
| <b>Vapour density</b>                 | -   | Not applicable          |
| <b>Specific Gravity</b>               | 1.45  |                         |
| <b>Water solubility</b>               | Not applicable  |                         |
| <b>Solubility(ies)</b>                |   |                         |
| <b>Partition coefficient</b>          | -   |                         |
| <b>Autoignition temperature</b>       | -   | Not applicable          |
| <b>Decomposition temperature</b>      | -   |                         |
| <b>Kinematic viscosity</b>            | -   | Not applicable          |
| <b>Dynamic viscosity</b>              | -   | Not applicable          |
| <b>Explosive properties</b>           | Not applicable  |                         |
| <b>Oxidising properties</b>           | Strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals. |                         |

### 9.2. Other information

|                         |                       |
|-------------------------|-----------------------|
| <b>Softening point</b>  | -                     |
| <b>Molecular weight</b> | -                     |
| <b>VOC Content (%)</b>  | Not applicable        |
| <b>Density</b>          | -                     |
| <b>Bulk density</b>     | 12 lb/ft <sup>3</sup> |

## Section 10: STABILITY AND REACTIVITY

### 10.1. Reactivity

Strong oxidizer and will react vigorously or explosively with many materials including organic materials, such as wood and paper, and flammable metals.

### 10.2. Chemical stability

Stable under recommended storage 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**

Nitrogen oxide gases may cause respiratory and/or eye irritation. Thermal decomposition produces nitrogen oxide gas.

## Section 11: TOXICOLOGICAL INFORMATION

**11.1. Information on toxicological effects****Product Information**

|                     |                           |
|---------------------|---------------------------|
| <b>Inhalation</b>   | Product not classified.   |
| <b>Eye contact</b>  | Causes severe eye damage. |
| <b>Skin Contact</b> | Causes severe skin burns. |
| <b>Ingestion</b>    | Harmful if swallowed.     |

| Chemical Name             | Oral LD50                 | Dermal LD50 | Inhalation LC50 |
|---------------------------|---------------------------|-------------|-----------------|
| Water                     | -                         | -           | -               |
| Zirconium Dinitrate Oxide | > 300 and < 2000 mg/kg bw | -           | -               |

**Information on toxicological effects**

|                 |  |
|-----------------|--|
| <b>Symptoms</b> | May cause acute gastrointestinal effects if swallowed. May cause skin burns. May cause severe upper respiratory irritation if inhaled. May cause burning sensation or redness in the eyes. |
|-----------------|--|

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

|  |                           |
|--|---------------------------|
| <b>Acute toxicity</b>                    | Harmful if swallowed.     |
| <b>Skin corrosion/irritation</b>         | Causes severe skin burns. |
| <b>Serious eye damage/eye irritation</b> | Causes severe eye damage. |
| <b>Sensitisation</b>                     | Product not classified.   |
| <b>Germ cell mutagenicity</b>            | Product not classified.   |
| <b>Carcinogenicity</b>                   | Product not classified.   |
| <b>Reproductive toxicity</b>             | Product not classified.   |
| <b>STOT - single exposure</b>            | Product not classified.   |
| <b>STOT - repeated exposure</b>          | Product not classified.   |
| <b>Aspiration hazard</b>                 | 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 Dinitrate Oxide | The 72 h EC50 of zirconium dichloride oxide to <i>Pseudokirchnerella subcapitata</i> was 80% v/v saturated solution. | The 96 h LL50 of zirconium dinitrate oxide to <i>Oncorhynchus mykiss</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. |

### 12.2. Persistence and degradability

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### 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

|  |   |
|--|---|
| <b>Waste from residues/unused products</b> | Disposal should be in accordance with applicable regional, national and local laws and regulations. |
| <b>Contaminated packaging</b>              | Disposal should be in accordance with applicable regional, national and local laws and regulations. |

## Section 14: TRANSPORT INFORMATION

### IMDG

|   |  |
|---|--|
| 14.1 UN/ID no   | 3098   |
| 14.2 Proper shipping name   | Oxidizing Liquid, Corrosive, n.o.s. (Zirconium Oxynitrate) |
| 14.3 Hazard Class   | 5.1 (8)  |
| 14.4 Packing Group  | II   |
| 14.5 Marine pollutant   | Not applicable   |
| 14.6 Special Provisions   | 62, IB1  |
| 14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code | Not applicable   |

### RID

|               |      |
|---------------|------|
| 14.1 UN/ID no | 3098 |
|---------------|------|

|                           |  |
|---------------------------|--|
| 14.2 Proper shipping name | Oxidizing Liquid, Corrosive, n.o.s. (Zirconium Oxynitrate) |
| 14.3 Hazard Class         | 5.1 (8)  |
| 14.4 Packing Group        | II   |
| 14.5 Environmental hazard | Not applicable   |
| 14.6 Special Provisions   | 62, IB1  |

**ADR**

|                           |  |
|---------------------------|--|
| 14.1 UN/ID no             | 3098   |
| 14.2 Proper shipping name | Oxidizing Liquid, Corrosive, n.o.s. (Zirconium Oxynitrate) |
| 14.3 Hazard Class         | 5.1 (8)  |
| 14.4 Packing Group        | II   |
| 14.5 Environmental hazard | Not applicable   |
| 14.6 Special Provisions   | 62, IB1  |

**ICAO (air)**

|                           |  |
|---------------------------|--|
| 14.1 UN/ID no             | 3098   |
| 14.2 Proper shipping name | Oxidizing Liquid, Corrosive, n.o.s. (Zirconium Oxynitrate) |
| 14.3 Hazard Class         | 5.1 (8)  |
| 14.4 Packing Group        | II   |
| 14.5 Environmental hazard | Not applicable   |
| 14.6 Special Provisions   | 62, IB1  |

**IATA**

|                           |  |
|---------------------------|--|
| 14.1 UN/ID no             | 3098   |
| 14.2 Proper shipping name | Oxidizing Liquid, Corrosive, n.o.s. (Zirconium Oxynitrate) |
| 14.3 Hazard Class         | 5.1 (8)  |
| 14.4 Packing Group        | II   |
| Description               | .  |
| 14.5 Environmental hazard | Not applicable   |
| 14.6 Special Provisions   | 62, IB1 <b>ERG Code</b> 140                                |

## 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<br>7732-18-5                      | -                | -     |
| Zirconium Dinitrate Oxide<br>13826-66-9 | -                | -     |

### 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/NDL       | Complies   |
| EINECS/ELINCS | Complies   |
| ENCS          | Complies   |
| IECSC         | Complies   |
| KECL          | Complies   |
| PICCS         | Not Listed |
| AICS          | Not Listed |

### 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

### **15.2. Chemical safety assessment**

No chemical safety assessment has been performed for this product.

## **Section 16: OTHER INFORMATION**

|                      |                             |
|----------------------|-----------------------------|
| <b>Issue Date</b>    | 14-Apr-2017                 |
| <b>Revision Date</b> | 17-Dec-2019                 |
| <b>Revision Note</b> | 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 [ATImetals.com](http://ATImetals.com)