



SAFETY DATA SHEET

Issue Date 25-Jan-2017

Revision Date 20-Mar-2018

Version 2

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

1.1. Product identifier

Product Code SAC037
Product Name Zirconium Oxynitrate

UN/ID no 3085
EC No 237-529-3
CAS No 13826-66-9
Synonyms Zirconium Oxynitrate; Zirconium Dinitrate Oxide, Zirconium Dinitrate Dihydroxide, Zirconium Nitrate Hydroxide, Zirconyl Nitrate (Product #316)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended Use Zirconium Compounds

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 solids	Category 2

2.2. Label elements

Emergency Overview

Danger

Hazard statements

May intensify fire; oxidizer
Causes severe skin burns and eye damage
Causes serious eye damage
Harmful if swallowed

**Appearance** Powder**Physical state** Solid**Odour** Pungent, Slight nitric**Precautionary Statements - Prevention**

Wear protective gloves/protective clothing/eye protection

Do not breathe dust/gas/mist

Do not eat, drink or smoke when using this product

Wash hands thoroughly after handling

Keep away from heat/sparks/open flames/hot surfaces. - No smoking

Store away from flammable substances, reducing agents, metal powders, and organic materials.

Precautionary Statements - Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician

IF ON SKIN (or hair): Brush off loose particles from skin, 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 a dry place. 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

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Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances**Synonyms**

Zirconium Oxynitrate: Zirconium Dinitrate Oxide, Zirconium Dinitrate Dihydroxide, Zirconium Nitrate Hydroxide, Zirconyl Nitrate (Product #316).

Chemical Name	EC No	CAS No	Weight-%
Zirconium Dinitrate Oxide	237-529-3	13826-66-9	>99

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

Brush off loose particles from skin. 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 moist skin may cause skin burns. May cause breathing difficulties if inhaled.
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4.3. Indication of any immediate medical attention and special treatment needed

Note to doctors	Treat symptomatically.
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Section 5: FIRE FIGHTING 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, CO₂ 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

Sweep or shovel material into dry containers. Avoid creating uncontrolled dust. 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. Protect from moisture: Reacts with water. Ensure adequate ventilation, especially in confined areas. Handle under inert gas such as nitrogen or argon to maintain the integrity of the product.

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). Store away from flammable substances, reducing agents, metal powders, and organic materials. 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.

Incompatible materials

Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics. Flammable substances, reducing agents, metal powders, and organic materials. Reacts with metals to produce heat and corrosive gases.

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
Zirconium Dinitrate Oxide 13826-66-9	-	TWA: 5 mg/m ³	-	STEL: 10 mg/m ³ TWA: 5 mg/m ³	-
Chemical Name	Italy	Portugal	Netherlands	Finland	Denmark
Zirconium Dinitrate Oxide 13826-66-9	-	STEL: 10 mg/m ³ TWA: 5 mg/m ³	-	TWA: 1 mg/m ³	TWA: 5 mg/m ³
Chemical Name	Austria	Switzerland	Poland	Norway	Ireland
Zirconium Dinitrate Oxide 13826-66-9	TWA: 5 mg/m ³	TWA: 5 mg/m ³	STEL: 10 mg/m ³ TWA: 5 mg/m ³	TWA: 5 mg/m ³ STEL: 5 mg/m ³	TWA: 5 mg/m ³ STEL: 10 mg/m ³

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

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

8.2. Exposure controls

Engineering Controls Avoid generation of uncontrolled particles. Local exhaust ventilation during processing is recommended.

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 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.

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	Solid	Odour	Pungent, Slight nitric
Appearance	Powder	Odour threshold	-
Colour	white		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	<1	
Melting point/freezing point	-	
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	-	
Vapour pressure	-	Not applicable
Vapour density	-	Not applicable
Specific Gravity	1.7	
Water solubility	Soluble in water	
Solubility(ies)		
Partition coefficient	-	
Autoignition temperature	-	Not applicable
Decomposition temperature	-	Not applicable
Kinematic viscosity	-	Not applicable
Dynamic viscosity	-	Not applicable
Explosive properties	Not applicable	
Oxidising properties	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

Softening point	-
Molecular weight	-
VOC Content (%)	Not applicable
Density	-
Bulk density	48 lb/ft ³

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

Reacts with water. 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 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

Reacts with water.

10.4. Conditions to avoid

Unintentional contact with water. Heat. Electrostatic discharge.

10.5. Incompatible materials

Water, alcohols, phenols, and amines. Rubber, coatings, and some plastics. Flammable substances, reducing agents, metal powders, and organic materials. Reacts with metals to produce heat and corrosive gases.

10.6. Hazardous decomposition products

Reacts with water to produce nitric acid and heat.

Section 11: TOXICOLOGICAL INFORMATION

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

Inhalation	Product not classified.
Eye contact	Causes severe eye damage.
Skin Contact	Causes severe skin burns.
Ingestion	Harmful if swallowed.

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

Information on toxicological effects

Symptoms	May cause skin burns. May cause burning sensation or redness in the eyes. May cause acute gastrointestinal effects if swallowed. May cause severe upper respiratory irritation if inhaled.
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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 Micro-organisms	Crustacea
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

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	3085
14.2 Proper shipping name	Oxidizing Solid, Corrosive, n.o.s. (Zirconium Oxynitrate)
14.3 Hazard Class	5.1
Subsidiary hazard class	8
14.4 Packing Group	II
14.5 Marine pollutant	Not applicable
14.6 Special Provisions	62, IB8, IP3, T1, TP33
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not applicable

RID

14.1 UN/ID no	3085
14.2 Proper shipping name	Oxidizing Solid, 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, IB8, IP3, T1, TP33

ADR

14.1 UN/ID no	3085
14.2 Proper shipping name	Oxidizing Solid, 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, IB8, IP3, T1, TP33

ICAO (air)

14.1 UN/ID no	3085
14.2 Proper shipping name	Oxidizing Solid, Corrosive, n.o.s. (Zirconium Oxynitrate)
14.3 Hazard Class	5.1
Subsidiary hazard class	8
14.4 Packing Group	II
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	62, IB8, IP3, T1, TP33

IATA

14.1 UN/ID no	3085
14.2 Proper shipping name	Oxidizing Solid, Corrosive, n.o.s. (Zirconium Oxynitrate)
14.3 Hazard Class	5.1 Subsidiary hazard class 8
14.4 Packing Group	II
Description	.
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	62, IB8, IP3, T1, TP33 140
	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
Zirconium Dinitrate Oxide 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/NDSL	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/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

Issue Date 25-Jan-2017

Revision Date 20-Mar-2018

Revision Note Updated Section(s): 1, 2, 5, 6, 7, 8, 9, 11, 16.

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