

## SAFETY DATA SHEET

Preparation Date: 5/30/2017

Revision Date: 5/30/2017

Revision Number: G1

### 1. IDENTIFICATION

#### Product identifier

**Product code:** Z1135  
**Product Name:** ZIRCONYL NITRATE, HYDRATE

#### Other means of identification

**Synonyms:** Zirconium dinitrate oxide hydrate; Zirconium(IV) oxynitrate hydrate  
**CAS #:** 14985-18-3  
**RTECS #** Not available  
**CI#:** Not available

#### Recommended use of the chemical and restrictions on use

**Recommended use:** No information available.  
**Uses advised against** No information available

**Supplier:** Spectrum Chemical Mfg. Corp  
 14422 South San Pedro St.  
 Gardena, CA 90248  
 (310) 516-8000.

**Order Online At:** <https://www.spectrumchemical.com>

**Emergency telephone number** Chemtrec 1-800-424-9300

**Contact Person:** Martin LaBenz (West Coast)

**Contact Person:** Ibad Tirmiz (East Coast)

### 2. HAZARDS IDENTIFICATION

#### Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Serious eye damage/eye irritation	Category 1
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#### Label elements

#### Danger

#### Hazard statements

Causes serious eye damage



**Hazards not otherwise classified (HNOC)**

Not Applicable

**Other hazards**

May be harmful if swallowed

**Precautionary Statements - Prevention**

Wear eye/face protection

**Precautionary Statements - Response**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Components	CAS-No.	Weight %
Zirconyl Nitrate, hydrate	14985-18-3	100

**4. FIRST AID MEASURES**

**First aid measures**

**General Advice:**

National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**Skin Contact:**

Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention if irritation develops.

**Eye Contact:**

Flush eyes with water for 15 minutes. Get medical attention.

**Inhalation:**

Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**

Severe eye irritation. Causes eye burns. Exposure to nitrites/nitrates can cause gastroenteritis, abdominal pain, nausea, vomiting, diarrhea, metabolic acidosis, purging, methemoglobinemia, cyanosis, muscle weakness, dizziness, lightheadedness, loss of coordination, fatigue, headache, seizures, convulsions, dyspnea, dysrhythmias, coma, and death. Can affect the liver, metabolism (weight loss), blood (methemoglobinemia), cardiovascular system (bradycardia/tachycardia, hypotension, vasodilation, irregular heartbeat), kidneys.

**Indication of any immediate medical attention and special treatment needed**

**Notes to Physician:**

Treat symptomatically.

**Protection of first-aiders**

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

**5. FIRE-FIGHTING MEASURES**

## Extinguishing Media

### **Suitable Extinguishing Media:**

Water. CO2 may be of no value in extinguishing fires involving oxidizers and may only provide limited control.

### **Unsuitable Extinguishing Media:**

Dry chemical. Foam. Halons.

## Specific hazards arising from the chemical

### **Hazardous Combustion Products:**

Nitrogen Oxides. Zirconium oxides.

### **Specific hazards:**

Oxidizer. Keep away from combustible materials (wood, paper, oil, clothing, etc.). The product is not flammable, but it may cause fire when in contact with other material. Contact with combustible or organic materials may cause fire. Will accelerate burning when involved in a fire. Container explosion may occur under fire conditions or when heated.

## Special Protective Actions for Firefighters

### **Specific Methods:**

For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. DO NOT use combustible materials such as sawdust.

### **Special Protective Equipment for Firefighters:**

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

## **6. ACCIDENTAL RELEASE MEASURES**

### Personal precautions, protective equipment and emergency procedures

#### **Personal Precautions:**

Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Keep combustibles (wood, paper, oil, clothing, etc.) away from spilled material.

#### **Environmental precautions**

Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas.

### Methods and material for containment and cleaning up

#### **Methods for containment**

Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

#### **Methods for cleaning up**

Sweep up and shovel into suitable containers for disposal. Do not use combustible materials such as paper towels, sawdust, clothing, etc. to clean up spill. Clean contaminated surface thoroughly.

## **7. HANDLING AND STORAGE**

### Precautions for safe handling

#### **Technical Measures/Precautions:**

Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

### Safe Handling Advice

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Do not breathe vapors/dust. Do not ingest. Do not smoke. Keep away from combustible material. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

### Conditions for safe storage, including any incompatibilities

#### Technical Measures/Storage Conditions:

Hygroscopic. Protect from moisture. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials. Do not store near combustible materials. Store in a segregated and approved area.

#### Incompatible Materials:

Organic materials  
Combustible materials  
Reducing agents  
Strong acids

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

#### National occupational exposure limits

##### United States

Components	CAS-No.	OSHA	NIOSH	ACGIH	AIHA WHEEL
Zirconyl Nitrate, hydrate	14985-18-3	None	None	5 mg/m <sup>3</sup> TWA (as Zr) 10 mg/mg STEL (as Zr)	None

##### Canada

Components	CAS-No.	Canada - Alberta	Canada - British Columbia	Canada - Ontario	Canada - Quebec
Zirconyl Nitrate, hydrate	14985-18-3	5 mg/m <sup>3</sup> TWA (as Zr) 10 mg/mg STEL (as Zr)	5 mg/m <sup>3</sup> TWA (as Zr) 10 mg/mg STEL (as Zr)	5 mg/m <sup>3</sup> TWA (as Zr) 10 mg/mg STEL (as Zr)	5 mg/m <sup>3</sup> TWAEV (as Zr) 10 mg/mg STEV (as Zr)

##### Australia and Mexico

Components	CAS-No.	Australia	Mexico
Zirconyl Nitrate, hydrate	14985-18-3	5 mg/m <sup>3</sup> TWA (as Zr) 10 mg/mg STEL (as Zr)	5 mg/m <sup>3</sup> TWA (as Zr) 10 mg/mg STEL (as Zr)

### Appropriate engineering controls

#### Engineering measures to reduce exposure:

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

### Individual protection measures, such as personal protective equipment

#### Personal Protective Equipment

**Eye protection:** Goggles

**Skin and body protection:** Chemical resistant apron  
Long sleeved clothing  
Gloves

**Respiratory protection:** Wear respirator with dust filter.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical state:</b> Solid	<b>Appearance:</b> Powder.	<b>Color:</b> White. Off-white.
<b>Odor:</b> Odorless.	<b>Taste</b> No information available.	<b>Formula:</b> ZrO(NO3)2.xH2O
<b>Molecular/Formula weight:</b> 231.23 + xH2O	<b>Flammability:</b> No information available	<b>Flashpoint (°C/°F):</b> No information available.
<b>Flash Point Tested according to:</b> Not available	<b>Autoignition Temperature (°C/°F):</b> No information available	<b>Lower Explosion Limit (%):</b> No information available
<b>Upper Explosion Limit (%):</b> No information available	<b>Melting point/range(°C/°F):</b> No information available	<b>Decomposition temperature(°C/°F):</b> No information available
<b>Boiling point/range(°C/°F):</b> No information available	<b>Bulk density:</b> No information available	<b>Density (g/cm3):</b> No information available
<b>Specific gravity:</b> No information available	<b>pH:</b> No information available	<b>Vapor pressure @ 20°C (kPa):</b> No information available
<b>Evaporation rate:</b> No information available	<b>Vapor density:</b> No information available	<b>VOC content (g/L):</b> No information available
<b>Odor threshold (ppm):</b> No information available	<b>Partition coefficient (n-octanol/water):</b> No information available	<b>Viscosity:</b> No information available
<b>Miscibility:</b> No information available	<b>Solubility:</b> Soluble in Water	

## 10. STABILITY AND REACTIVITY

**Reactivity**

No information available

**Chemical stability**

**Stability:** Hygroscopic. Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** Hazardous polymerization does not occur

**Conditions to avoid:** Exposure to moisture. Exposure to moist air. Incompatible materials. Contact with combustible materials (wood, paper, oil, clothing, etc.).

**Incompatible Materials:** Organic materials

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Combustible materials  
Reducing agents  
Strong acids

**Hazardous decomposition products:**

Nitrogen oxides (NOx). Zirconium oxides.

**Other Information**

**Corrosivity:**

No information available

**Special Remarks on Corrosivity:** No information available

**11. TOXICOLOGICAL INFORMATION**

**Information on likely routes of exposure**

**Principal Routes of Exposure:**

Ingestion. Inhalation.

**Acute Toxicity**

**Component Information**

Zirconyl Nitrate, hydrate

CAS-No. 14985-18-3

**LD50/oral/rat** = 2500 mg/kg Oral LD50 Rat  
**LD50/oral/mouse** = No information available  
**LD50/dermal/rabbit** = No information available  
**LD50/dermal/rat** = No information available  
**LC50/inhalation/rat** = No information available  
**LC50/inhalation/mouse** = No information available  
**Other LD50 or LC50 information** = No information available

**Product Information**

**LD50/oral/rat** =  
**VALUE- Acute Tox Oral** = 2500 mg/kg

**LD50/oral/mouse** =  
**Value - Acute Tox Oral** = No information available

**LD50/dermal/rabbit**  
**VALUE-Acute Tox Dermal** = No information available

**LD50/dermal/rat**  
**VALUE -Acute Tox Dermal** = No information available

**LC50/inhalation/rat**  
**VALUE-Vapor** = No information available  
**VALUE-Gas** = No information available  
**VALUE-Dust/Mist** = No information available

**LC50/Inhalation/mouse**  
**VALUE-Vapor** = No information available  
**VALUE - Gas** = No information available  
**VALUE - Dust/Mist** = No information available

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## Symptoms

**Skin Contact:** May cause skin irritation. This is a zirconium compound. Skin contact with zirconium compounds may cause small, reddish-brown papules in linear streaks on abraded skin.

**Eye Contact:** Causes severe irritation and burns. Possible eye damage.

**Inhalation** May cause irritation of respiratory tract.

**Ingestion** May be harmful if swallowed. Ingestion of large doses of nitrates causes gastrointestinal tract irritation with nausea, vomiting, abdominal cramps, diarrhea (possibly bloody, from gastrointestinal hemorrhage). Under some circumstances, when the nitrate is converted by bacteria in the stomach to nitrite, it may also cause methemoglobinemia, cyanosis (a bluish discoloration of the skin due to deficient oxygenation of the blood), convulsions and death. Methemoglobinemia is characterized by dizziness, lightheadedness, vertigo, weakness, fatigue, lethargy, convulsions (seizures), drowsiness, headache, mental impairment, shortness of breath, cyanosis, rapid heart rate (tachycardia) or slow heart rate (bradycardia), hypotension, arrhythmias, tingling sensation, flushing, chocolate brown colored blood, unconsciousness.

**Aspiration hazard** No information available.

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

**Chronic Toxicity** Chronic exposure to dusts or aerosols of Zirconium or Zirconium compounds may cause pulmonary granulomas. This product is also a nitrate, therefore nitrate poisoning can occur. Prolonged or repeated nitrate ingestion may affect the urinary system (kidneys) and also may affect the blood, resulting in methemoglobin with attendant cyanosis, anorexia, hyperpnea and later dyspnea and chocolate brown colored blood. The primary toxic effects of nitrates include orthostatic hypotension and methemoglobinemia, Other symptoms include muscular weakness, faintness, dizziness, lightheadedness, fatigue, throbbing headache, mental impairment, incoordination, seizures, and convulsions, bradycardia or tachycardia, dysrhythmias, dyspnea. Prolonged or repeated ingestion of large amounts of nitrates may affect the liver and can cause gastroenteritis, nausea, vomiting, abdominal pain, weight loss. Possible coma and death.

**Sensitization:** No information available.

**Mutagenic Effects:** No information available

**Carcinogenic effects:** IARC group 2A - Listed under Nitrate or Nitrite (ingested) under conditions that result in endogenous nitrosation.

Components	CAS-No.	IARC	ACGIH - Carcinogens	NTP	OSHA HCS - Carcinogens	Australia - Notifiable Carcinogenic Substances	Australia - Prohibited Carcinogenic Substances
Zirconyl Nitrate, hydrate	14985-18-3	Group 2A - Probably Carcinogenic to Humans - monograph 94[2010] (covers ingested)	A4- Not Classifiable as a Human Carcinogen	Not listed	Not listed	Not listed	Not listed

		nitrates under conditions that result in endogenous nitrosation)(nitrate compounds)					
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ACGIH (American Conference of Governmental Industrial Hygienists)

IARC (International Agency for Research on Cancer)

NTP (National Toxicology Program)

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

**Reproductive toxicity** No data is available

**Reproductive Effects:** No information available  
**Developmental Effects:** No information available  
**Teratogenic Effects:** No information available

**Specific Target Organ Toxicity**

**STOT - single exposure** No information available.  
**STOT - repeated exposure** No information available.  
**Target Organs:** No information available.

**12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Ecotoxicity effects:** No data available.

**Persistence and degradability:** No information available

**Bioaccumulative potential:** No information available.

**Mobility:** No information available.

**13. DISPOSAL CONSIDERATIONS**

**Disposal Methods**

**Waste from residues / unused products:**  
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**  
Empty containers should be taken for local recycling, recovery or waste disposal

Components	CAS-No.	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Zirconyl Nitrate, hydrate	14985-18-3	None	None	None	None

**14. TRANSPORT INFORMATION**

**DOT UN-No:** Not Regulated

**Product code:** Z1135

**Product name:** ZIRCONYL NITRATE, HYDRATE



**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Subsidiary Class:** No information available  
**Packing group:** No information available  
**Emergency Response Guide Number:** No information available  
**Marine Pollutant:** No data available  
**DOT RQ (lbs):** No information available  
**Special Provisions:** No Information available  
**Symbol(s):** No information available  
**Description:** No information available

#### **TDG (Canada)**

**UN-No:** Not Regulated  
**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Subsidiary Risk:** No information available  
**Packing Group:** No information available  
**Marine Pollutant:** No Information available  
**Description:** No information available

#### **ADR**

**UN-No:** Not Regulated  
**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Packing Group:** No information available  
**Subsidiary Risk:** No information available

#### **IMO / IMDG**

**UN-No:** Not Regulated  
**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Subsidiary Risk:** No information available  
**Packing Group:** No information available  
**Marine Pollutant:** No information available

#### **RID**

**UN-No:** Not Regulated  
**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Subsidiary Risk:** No information available  
**Packing Group:** No information available

#### **ICAO**

**UN-No:** Not Regulated  
**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Subsidiary Risk:** No information available  
**Packing Group:** No information available

#### **IATA**

**UN-No:** Not Regulated  
**Proper Shipping Name:** No information available  
**Hazard Class:** No information available  
**Subsidiary Risk:** No information available  
**Packing Group:** No information available  
**ERG Code:** No information available  
**Special Provisions:** No information available

## 15. REGULATORY INFORMATION

### International Inventories

Components	CAS-No.	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Zirconyl Nitrate, hydrate	14985-18-3	Present	Present KE-35629	Not present	Present (1)-721	Present	Not present	Present 237-529-3

### U.S. Regulations

#### California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.

##### Chemicals Known to the State of California to Cause Cancer:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

##### Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	CAS-No.	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Zirconyl Nitrate, hydrate	14985-18-3	Not Listed	Not Listed	Not Listed	Not Listed

### CERCLA/SARA

Components	CAS-No.	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting de minimis
Zirconyl Nitrate, hydrate	14985-18-3	None	None	None	None	None

### U.S. TSCA

Components	CAS-No.	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Zirconyl Nitrate, hydrate	14985-18-3	Not Applicable	Not Applicable

### Canada

#### WHMIS 2015 - GHS Classifications

WHMIS 2015 Hazard Classification Information:

Component  
Zirconyl Nitrate, hydrate  
14985-18-3 ( 100 )

WHMIS 2015 Hazard Classification  
Oxidizing solids - Undefined: Oxidizing solids - undefined category  
(hazard class was established from consulted scientific literature but did not allow to specify hazard category)

**Canada Hazardous Products Regulation** This product has been classified according to the hazard criteria of the HPR (Hazardous Products Regulation) and the SDS contains all of the information required by the HPR

#### WHMIS 1988 Hazard Class

C Oxidizing materials

**Components**  
Zirconyl Nitrate, hydrate

WHMIS 1988  
C

**Product code:** Z1135

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**Canada Controlled Products Regulation:**

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

**Inventory**

Components	CAS-No.	Canada (DSL)	Canada (NDSL)
Zirconyl Nitrate, hydrate	14985-18-3	Present	Not Listed

Components	CAS-No.	CEPA Schedule I - Toxic Substances
Zirconyl Nitrate, hydrate	14985-18-3	Not listed
Components	CAS-No.	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Zirconyl Nitrate, hydrate	14985-18-3	Not listed

**EU Classification****EU GHS - SV - CLP 172/2008**

Components	CAS-No.	EU GHS - SV - CLP (172/2008)
Zirconyl Nitrate, hydrate	14985-18-3	No information

**EU - CLP (1272/2008)****R-phrase(s)**

R34 - Causes burns.

R22 - Harmful if swallowed.

**S -phrase(s)**

S46 - If swallowed, seek medical advice immediately and show this container or label.

S36/39 - Wear suitable protective clothing and eye/face protection.

Components	CAS-No.	Classification	Concentration Limits:	Safety Phrases
Zirconyl Nitrate, hydrate	14985-18-3		No information	

**The product is classified in accordance with Annex VI to Directive 67/548/EEC**

**Indication of danger:**

C - Corrosive.

**16. OTHER INFORMATION**

Preparation Date: 5/30/2017  
 Revision Date: 5/30/2017  
 Prepared by: Sonia Owen

**Disclaimer:**

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this

SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

**End of Safety Data Sheet**