

SAFETY DATA SHEET

Date Printed: 05/12/2024

Date Revised: 01/15/2022

SECTION 1. IDENTIFICATION

Product Identifier: (5N) 99.999% Zirconium(IV) Nitrate

Product Code: ZR4-NAT-05

CAS Number: 13746-89-9

Relevant identified uses of the substance: Scientific research and development

Supplier details:

American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351
Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Oxidizing. Corrosive.

Contact with combustible material may cause fire. Causes burns.

HMIS RATING

HEALTH: 3

FLAMMABILITY: 3

REACTIVITY: 0

NFPA RATING

HEALTH: 3

FLAMMABILITY: 3

REACTIVITY: 0

For additional information on toxicity, please refer to Section 11.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance Name CAS # SARA 313

ZIRCONIUM(IV) NITRATE 13746-89-9 No

Formula N₄O₁₂Zr

Synonyms Dusican zirkonicity (Czech) * Nitric acid,

zirconium(4+) salt (8Cl,9Cl) *
Tetranitratozirconium * Zirconium tetranitrate
RTECS Number: ZH8750000

SECTION 4. FIRST AID MEASURES

ORAL EXPOSURE

If swallowed, wash out mouth with water provided person is conscious. Call a physician immediately.

INHALATION EXPOSURE

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

DERMAL EXPOSURE

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Call a physician.

EYE EXPOSURE

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

SECTION 5. FIREFIGHTING MEASURES

FLASH POINT

N/A

AUTOIGNITION TEMP

N/A

FLAMMABILITY

N/A

EXTINGUISHING MEDIA

Suitable: Carbon dioxide, dry chemical powder, or appropriate foam.

Unsuitable: Do not use water.

FIREFIGHTING

Protective Equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Specific Hazard(s): Emits toxic fumes under fire conditions.

Contact with other material may cause fire.

Specific Method(s) of Fire Fighting: Use water spray to cool fire-exposed containers.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PROCEDURE TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area.

PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

METHODS FOR CLEANING UP

Sweep up, place in a bag and hold for waste disposal. Ventilate

area and wash spill site after material pickup is complete.

SECTION 7. HANDLING AND STORAGE

HANDLING

User Exposure: Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

STORAGE

Suitable: Keep tightly closed. Keep away from combustible materials, heat, sparks, and open flame. Store in a cool dry place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS

Safety shower and eye bath. Use only in a chemical fume hood.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory: Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

Hand: Compatible chemical-resistant gloves.

Eye: Chemical safety goggles.

GENERAL HYGIENE MEASURES

Wash contaminated clothing before reuse. Discard contaminated shoes. Wash thoroughly after handling.

EXPOSURE LIMITS, RTECS

Country Source Type Value

USA ACGIH TWA 5 MG(ZR)/M3

STEL 10 MG(ZR)/M3

USA MSHA Standard-air TWA 5 MG(ZR)/M3

USA OSHA. PEL 8H TWA 5 MG(ZR)/M3

New Zealand OEL

Remarks: check ACGIH TLV

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Physical State: Solid

Property Value At Temperature or Pressure

Molecular Weight 339,2000 AMU

pH N/A

BP/BP Range N/A

MP/MP Range N/A

Freezing Point N/A

Vapor Pressure N/A

Vapor Density N/A

Saturated Vapor Conc. N/A

Bulk Density N/A
Odor Threshold N/A
Volatile% N/A
VOC Content N/A
Water Content N/A
Solvent Content N/A
Evaporation Rate N/A
Viscosity N/A
Surface Tension N/A
Partition Coefficient N/A
Decomposition Temp. N/A
Flash Point N/A
Explosion Limits N/A
Flammability N/A
Autoignition Temp N/A
Refractive Index N/A
Optical Rotation N/A
Miscellaneous Data N/A
Solubility N/A
N/A = not available

SECTION 10. STABILITY AND REACTIVITY

STABILITY

Stable: Unstable.

Materials to Avoid: Strong acids, Strong bases, Strong oxidizing agents, Amines, Polymerizing initiators, Reducing agents, Finely powdered metals.

HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Nitrogen oxides, Zirconium oxides.

HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

SECTION 11. TOXICOLOGICAL INFORMATION

ROUTE OF EXPOSURE

Skin Contact: Causes burns.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: Causes burns.

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion: May be harmful if swallowed.

SIGNS AND SYMPTOMS OF EXPOSURE

Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema.

Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly

investigated. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

TOXICITY DATA

Oral

Rat

2290,000000 mg/kg

LD50

ACGIH CARCINOGEN LIST

Rating: A4

SECTION 12. ECOLOGICAL INFORMATION

No data available.

SECTION 13. DISPOSAL CONSIDERATIONS

APPROPRIATE METHOD OF DISPOSAL OF SUBSTANCE OR PREPARATION

Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state, and local environmental regulations.

SECTION 14. TRANSPORT INFORMATION

DOT

Proper Shipping Name: Nitrates, inorganic, n.o.s.

UN#: 1477

Class: 5.1

Packing Group: Packing Group II

Hazard Label: Oxidizer

PIH: Not PIH

IATA

Proper Shipping Name: Nitrates, inorganic, n.o.s.

IATA UN Number: 1477

Hazard Class: 5.1

Packing Group: II

SECTION 15. REGULATORY INFORMATION

EU ADDITIONAL CLASSIFICATION

Symbol of Danger: O-C

Indication of Danger: Oxidizing. Corrosive.

R: 8-34

Risk Statements: Contact with combustible material may cause fire. Causes burns.

S: 17-45-26-36/37/39

Safety Statements: Keep away from combustible material. In case

of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection.

US CLASSIFICATION AND LABEL TEXT

Indication of Danger: Oxidizing. Corrosive.

Risk Statements: Contact with combustible material may cause fire. Causes burns.

Safety Statements: Keep away from combustible material. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing, gloves, and eye/face protection.

UNITED STATES REGULATORY INFORMATION

SARA LISTED: No

TSCA INVENTORY ITEM: Yes

CANADA REGULATORY INFORMATION

WHMIS Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: No

NDSL: Yes

16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2022 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.