

## Chemical Safety Data Sheet MSDS / SDS

## Zirconium nitrate

Revision Date:2026-05-31 Revision Number:1

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

## Product identifier

Product name : Zirconium nitrate  
CBnumber : CB4874993  
CAS : 13746-89-9  
EINECS Number : 237-324-9  
Synonyms : Zirconium nitrate,Zirconium nitrate pentahydrate

## Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses : For R&D use only. Not for medicinal, household or other use.  
Uses advised against : none

## Company Identification

Company : Chemicalbook  
Address : Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing  
Telephone : 010-86108875

## SECTION 2: Hazards identification

## Classification of the substance or mixture

Serious eye damage, Category 1

## Label elements

## Pictogram(s)

Signal word : Danger

## Hazard statement(s)

H272 May intensify fire; oxidizer  
H318 Causes serious eye damage

## Precautionary statement(s)

## Prevention

P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...

## Response

P305+P354+P338 IF IN EYES: Immediately rinse with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P317 Get medical help.

#### Storage

none

#### Disposal

none

#### Other hazards

no data available

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## SECTION 3: Composition/information on ingredients

### Substance

|              |                                                    |
|--------------|----------------------------------------------------|
| Product name | : Zirconium nitrate                                |
| Synonyms     | : Zirconium nitrate,Zirconium nitrate pentahydrate |
| CAS          | : 13746-89-9                                       |
| EC number    | : 237-324-9                                        |
| MF           | : HNO <sub>3</sub> Zr                              |
| MW           | : 154.24                                           |

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## SECTION 4: First aid measures

### Description of first aid measures

#### If inhaled

Move the victim into fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and consult a doctor immediately.

Do not use mouth to mouth resuscitation if the victim ingested or inhaled the chemical.

#### Following skin contact

Take off contaminated clothing immediately. Wash off with soap and plenty of water. Consult a doctor.

#### Following eye contact

Rinse with pure water for at least 15 minutes. Consult a doctor.

#### Following ingestion

Rinse mouth with water. Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a doctor or Poison Control Center immediately.

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

no data available

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

no data available

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## SECTION 5: Firefighting measures

## **Extinguishing media**

Use dry chemical, carbon dioxide or alcohol-resistant foam.

## **Specific Hazards Arising from the Chemical**

no data available

## **Advice for firefighters**

Wear self-contained breathing apparatus for firefighting if necessary.

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# **SECTION 6: Accidental release measures**

## **Personal precautions, protective equipment and emergency procedures**

Avoid dust formation. Avoid breathing mist, gas or vapours. Avoid contacting with skin and eye. Use personal protective equipment. Wear chemical impermeable gloves. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

## **Environmental precautions**

Prevent further spillage or leakage if it is safe to do so. Do not let the chemical enter drains. Discharge into the environment must be avoided.

## **Methods and materials for containment and cleaning up**

Collect and arrange disposal. Keep the chemical in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

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# **SECTION 7: Handling and storage**

## **Precautions for safe handling**

Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

## **Conditions for safe storage, including any incompatibilities**

Store the container tightly closed in a dry, cool and well-ventilated place. Store apart from foodstuff containers or incompatible materials.

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# **SECTION 8: Exposure controls/personal protection**

## **Control parameters**

### **Occupational Exposure limit values**

no data available

### **Biological limit values**

no data available

## **Exposure controls**

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

### Individual protection measures

#### Eye/face protection

Wear tightly fitting safety goggles with side-shields conforming to EN 166(EU) or NIOSH (US).

#### Skin protection

Wear fire/flammable resistant and impervious clothing. Handle with gloves. Gloves must be inspected prior to use. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

#### Respiratory protection

If the exposure limits are exceeded, irritation or other symptoms are experienced, use a full-face respirator.

#### Thermal hazards

no data available

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## SECTION 9: Physical and chemical properties

### Information on basic physicochemical properties

|                                                          |                                       |
|----------------------------------------------------------|---------------------------------------|
| Physical state                                           | white hygroscopic crystals            |
| Colour                                                   | White.                                |
| Odour                                                    | no data available                     |
| Melting point/freezing point                             | 100 °C                                |
| Boiling point or initial boiling point and boiling range | Remarks:Decomposition before melting. |
| Flammability                                             | no data available                     |
| Lower and upper explosion limit/flammability limit       | no data available                     |
| Flash point                                              | no data available                     |
| Auto-ignition temperature                                | no data available                     |
| Decomposition temperature                                | no data available                     |
| pH                                                       | no data available                     |
| Kinematic viscosity                                      | no data available                     |
| Solubility                                               | Miscible with water                   |
| Partition coefficient n-octanol/water                    | no data available                     |
| Vapour pressure                                          | no data available                     |
| Density and/or relative density                          | >1 g/cm <sup>3</sup> (20°C) (solid)   |
| Relative vapour density                                  | no data available                     |
| Particle characteristics                                 | no data available                     |

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## SECTION 10: Stability and reactivity

### Reactivity

no data available

#### **Chemical stability**

no data available

#### **Possibility of hazardous reactions**

no data available

#### **Conditions to avoid**

no data available

#### **Incompatible materials**

no data available

#### **Hazardous decomposition products**

no data available

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## **SECTION 11: Toxicological information**

#### **Acute toxicity**

- Oral: LD50 - rat (male/female) - 4 100 mg/kg bw. Remarks: No sex differences were noted in the degree to which rats were susceptible to the substance investigated. LD50 values were therefore derived from the combined data on both sexes.
- Inhalation: concentration of Zr - rat - > 2 - <= 3 mg/L air.
- Dermal: no data available

#### **Skin corrosion/irritation**

no data available

#### **Serious eye damage/irritation**

no data available

#### **Respiratory or skin sensitization**

no data available

#### **Germ cell mutagenicity**

no data available

#### **Carcinogenicity**

no data available

#### **Reproductive toxicity**

no data available

#### **STOT-single exposure**

no data available

### **STOT-repeated exposure**

no data available

### **Aspiration hazard**

no data available

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## **SECTION 12: Ecological information**

### **Toxicity**

Toxicity to fish: LC50 - *Danio rerio* (previous name: *Brachydanio rerio*) - > 100 mg/L - 96 h.

Toxicity to daphnia and other aquatic invertebrates: EL50 - *Daphnia magna* - > 100 % saturated solution (initial loading rate = 100 mg/L) - 48 h.

Toxicity to algae: EC50 - *Pseudokirchneriella subcapitata* (previous names: *Raphidocelis subcapitata*, *Selenastrum capricornutum*) - 2.6 mg/L - 96 h.

Toxicity to microorganisms: no data available

### **Persistence and degradability**

no data available

### **Bioaccumulative potential**

no data available

### **Mobility in soil**

no data available

### **Other adverse effects**

no data available

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## **SECTION 13: Disposal considerations**

### **Disposal methods**

#### **Product**

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

#### **Contaminated packaging**

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

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## **SECTION 14: Transport information**

### UN Number

ADR/RID: UN3264 (For reference only, please check.)

IMDG: UN3264 (For reference only, please check.)

IATA: UN3264 (For reference only, please check.)

### UN Proper Shipping Name

ADR/RID: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (For reference only, please check.)

IMDG: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (For reference only, please check.)

IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (For reference only, please check.)

### Transport hazard class(es)

ADR/RID: 8 (For reference only, please check.)

IMDG: 8 (For reference only, please check.)

IATA: 8 (For reference only, please check.)

### Packing group, if applicable

ADR/RID: I (For reference only, please check.)

IMDG: I (For reference only, please check.)

IATA: I (For reference only, please check.)

### Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

### Special precautions for user

no data available

### Transport in bulk according to IMO instruments

no data available

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## SECTION 15: Regulatory information

### Safety, health and environmental regulations specific for the product in question

#### European Inventory of Existing Commercial Chemical Substances (EINECS)

Listed.

#### EC Inventory

Listed.

#### United States Toxic Substances Control Act (TSCA) Inventory

Listed.

#### China Catalog of Hazardous chemicals 2015

Listed.

#### New Zealand Inventory of Chemicals (NZIoC)

Listed.

**PICCS**

Listed.

**Vietnam National Chemical Inventory**

Listed.

**IECSC**

Listed.

**Korea Existing Chemicals List (KECL)**

Listed.

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## SECTION 16: Other information

### Abbreviations and acronyms

CAS: Chemical Abstracts Service

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

IMDG: International Maritime Dangerous Goods

IATA: International Air Transportation Association

TWA: Time Weighted Average

STEL: Short term exposure limit

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

EC50: Effective Concentration 50%

### References

IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>

HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>

IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>

eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: [http://www.echemportal.org/echemportal/index?pagelD=0&request\\_locale=en](http://www.echemportal.org/echemportal/index?pagelD=0&request_locale=en)

CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>

ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>

ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>

Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

#### Disclaimer:

The information in this MSDS is only applicable to the specified product, unless otherwise specified, it is not applicable to the mixture of this product and other substances. This MSDS only provides information on the safety of the product for those who have received the appropriate professional training for the user of the product. Users of this MSDS must make independent judgments on the applicability of this SDS. The authors of this MSDS will not be held responsible for any harm caused by the use of this MSDS.