

## Zinc Citrate dihydrate

Version number: 1.0

### SECTION 1: Identification

#### 1.1 Product identifier

<b>Identification of the substance</b>	trizinc dicitrate dihydrate
<b>Trade name</b>	<b><u>Zinc Citrate dihydrate</u></b>
<b>CAS number</b>	5990-32-9

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

<b>Relevant identified uses</b>	Chemicals for various applications
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#### 1.3 Details of the supplier of the safety data sheet

Valudor Products, LLC	Telephone: +1 (760) 635 8500
179 Calle Magdalena Suite 100	e-mail: info@valudor.com
Encinitas, California CA 92024	Website: www.valudor.com
United States	

#### 1.4 Emergency telephone number

<b>Emergency information</b>	800-535-5053 (Infotrac)
As above or nearest toxicological information centre.	

### SECTION 2: Hazard(s) identification

#### 2.1 Classification of the substance or mixture

Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

Classification				
Section	Hazard class	Category	Hazard class and category	Hazard statement
A.3	serious eye damage/eye irritation	2	Eye Irrit. 2	H319

For full text of abbreviations: see SECTION 16

#### 2.2 Label elements

Labelling acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

<b>Signal word</b>	warning
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## Pictograms

GHS07



## Hazard statements

**H319** Causes serious eye irritation.

## Precautionary statements

**P280** Wear eye protection/face protection.

**P305+P351+P338** If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

**P337+P313** If eye irritation persists: Get medical advice/attention.

## 2.3 Other hazards

### Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

**Name of substance** trizinc dicitrate dihydrate

#### Identifiers

**CAS No** 5990-32-9

**Molecular formula**  $Zn_3(C_6H_5O_7)_2 \cdot (H_2O)_2$

**Molar mass** 610.4 <sup>g</sup>/<sub>mol</sub>

**Purity** 99 %

## SECTION 4: First-aid measures

### 4.1 Description of first-aid measures

#### General notes

Self-protection of the first aider.

Remove affected person from the danger area and lay down.

Do not leave affected person unattended.

Take off immediately all contaminated clothing.

In all cases of doubt, or when symptoms persist, seek medical advice.

#### Following inhalation

Provide fresh air.

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions.

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## **Following skin contact**

Rinse skin with water/shower.

After contact with skin, take off immediately all contaminated clothing, and wash immediately with plenty of water and soap.

If skin irritation or rash occurs: Get medical advice/attention.

## **Following eye contact**

Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention.

## **Following ingestion**

Rinse mouth immediately and drink plenty of water.

Do NOT induce vomiting.

Get medical advice/attention if you feel unwell.

Keep affected person warm, still and covered.

## **Notes for the doctor**

None.

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

Fever.

Irritant to the eye.

Nausea.

Vomiting.

Diarrhoea.

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

None.

## **SECTION 5: Fire-fighting measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

foam, alcohol resistant foam, fire extinguishing powder, carbon dioxide (CO<sub>2</sub>)

#### **Unsuitable extinguishing media**

water jet

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

Combustible.

Hazardous decomposition products: Section 10.

Deposited combustible dust has considerable explosion potential.

#### **Hazardous combustion products**

carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), metal oxide smoke, toxic

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## 5.3 Advice for firefighters

Keep containers cool with water spray.  
In case of fire and/or explosion do not breathe fumes.  
Coordinate firefighting measures to the fire surroundings.  
Do not allow firefighting water to enter drains or water courses.  
Collect contaminated firefighting water separately.  
Fight fire with normal precautions from a reasonable distance.

### Special protective equipment for firefighters

use suitable breathing apparatus, chemical protection suit

## SECTION 6: Accidental release measures

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

#### For non-emergency personnel

Remove persons to safety.  
Ventilate affected area.  
Avoid contact with skin and eyes.  
Wearing of suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing.

#### For emergency responders

Wear breathing apparatus if exposed to vapors/dust/aerosols/gases.

### 6.2 Environmental precautions

Keep away from drains, surface and ground water.  
Retain contaminated washing water and dispose of it.  
If substance has entered a water course or sewer, inform the responsible authority.

### 6.3 Methods and material for containment and cleaning up

#### Advice on how to contain a spill

Take up mechanically.

#### Advice on how to clean up a spill

Take up mechanically.  
Collect spillage.

#### Other information relating to spills and releases

Place in appropriate containers for disposal.  
Ventilate affected area.

### 6.4 Reference to other sections

Hazardous combustion products: see section 5.  
Personal protective equipment: see section 8.  
Incompatible materials: see section 10.  
Disposal considerations: see section 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Avoid contact with skin and eyes.  
Do not breathe dust.

#### Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.  
Keep away from sources of ignition - No smoking.  
Removal of dust deposits.

#### Specific notes/details

Dust deposits may accumulate on all deposition surfaces in a technical room.

#### Measures to protect the environment

Avoid release to the environment.

#### Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.  
Wash hands after use.  
Preventive skin protection (barrier creams/ointments) is recommended.  
Remove contaminated clothing and protective equipment before entering eating areas.

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

#### Explosive atmospheres

Removal of dust deposits.

#### Flammability hazards

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

#### Incompatible substances or mixtures

Incompatible materials: see section 10.

#### Protect against external exposure, such as

heat, humidity

#### Consideration of other advice

Keep away from food, drink and animal feedingstuffs.

#### Ventilation requirements

Provision of sufficient ventilation.

#### Specific designs for storage rooms or vessels

Store in a dry place.

#### Packaging compatibilities

Only packagings which are approved (e.g. acc. to DOT) may be used.

### 7.3 Specific end use(s)

Chemicals for various applications.

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

The following constituents are the only constituents of the product which have a PEL, a TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

<b>Occupational exposure limit values (Workplace Exposure Limits)</b>									
<b>Country</b>	<b>Name of agent</b>	<b>CAS No</b>	<b>Identifier</b>	<b>TWA [ppm]</b>	<b>TWA [mg/m<sup>3</sup>]</b>	<b>STEL [ppm]</b>	<b>STEL [mg/m<sup>3</sup>]</b>	<b>Notation</b>	<b>Source</b>
US	Particulates not otherwise regulated	-	PEL (CA)	-	10	-	-	dust	Cal/OSHA PEL
US	Particulates not otherwise regulated	-	PEL (CA)	-	5	-	-	r	Cal/OSHA PEL
US	particulates not otherwise classified	-	REL	-	-	-	-	appx-D	NIOSH REL
US	particulates not otherwise classified (PNOC)	-	PEL	1,766	15	-	-	partml, i, dust	29 CFR 1910.1000
US	particulates not otherwise classified (PNOC)	-	PEL	529.5	5	-	-	partml, r, dust	29 CFR 1910.1000

#### Notation

appx-D see Appendix D - Substances with No Established RELs

dust as dust

i inhalable fraction

partml particles/ml

r respirable fraction

STEL short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period (unless otherwise specified)

TWA time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average (unless otherwise specified)

### 8.2 Exposure controls

#### Appropriate engineering controls

Use local and general ventilation.

#### Individual protection measures (personal protective equipment)

##### Eye/face protection

Wear eye/face protection.

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## Hand protection

Protective gloves		
Material	Material thickness	Breakthrough times of the glove material
no information available	no information available	no information available

Wear suitable gloves.

Chemical protection gloves are suitable, which are tested according to EN 374.

Check leak-tightness/impermeability prior to use.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

## Body protection

Protective clothing for use against solid particulates.

## Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Particle filter device (DIN EN 143).

## Environmental exposure controls

Use appropriate container to avoid environmental contamination.

Keep away from drains, surface and ground water.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	solid (powder)
<b>Color</b>	white
<b>Odor</b>	characteristic
<b>Odor threshold</b>	not determined

#### Other safety parameters

<b>pH (value)</b>	not applicable
<b>Melting point/freezing point</b>	211 – 212 °C
<b>Boiling point or initial boiling point and boiling range</b>	not determined
<b>Flash point</b>	not applicable
<b>Evaporation rate</b>	not determined
<b>Flammability (solid, gas)</b>	this material is combustible, but will not ignite readily

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## Explosive limits

not determined

Explosion limits of dust clouds

not determined

## Vapor pressure

0 Pa at 25 °C  
(ECHA, read-across)

Density

not determined

Relative vapour density

not applicable

## Solubility(ies)

Water solubility

3.2 g/l at 20 °C  
(ECHA, OECD Guideline 105)

## Partition coefficient

n-octanol/water (log KOW)

-1.8 – -0.2

Auto-ignition temperature

not determined

## Decomposition temperature

not relevant

## Viscosity

not relevant  
(solid)

## Explosive properties

none

## Oxidizing properties

none

## Information for relevant hazard classes according to GHS

hazard classes acc. to GHS (physical hazards):  
not relevant

## 9.2 Other information

there is no additional information

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

This material is not reactive under normal ambient conditions.

### 10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.  
See below "Conditions to avoid".

### 10.3 Possibility of hazardous reactions

No known hazardous reactions.

### 10.4 Conditions to avoid

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
Control of dust.



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The product in the delivered form is not dust explosion capable; the enrichment of fine dust however leads to the danger of dust explosion.

## 10.5 Incompatible materials

oxidizers

## 10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known.

Hazardous combustion products: see section 5.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

If not otherwise specified the classification is based on:

Animal studies; Evidence from any other toxicity tests; Expert judgment (weight of evidence determination).

#### Classification acc. to OSHA "Hazard Communication Standard" (29 CFR 1910.1200)

##### Acute toxicity

Shall not be classified as acutely toxic (oral).

Shall not be classified as acutely toxic (dermal).

##### Inhalation.

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

Exposure route	Endpoint	Value	Species	Method	Source
oral	LD0	>2,000 mg/kg	rat	OECD Guideline 401	ECHA
dermal	LD0	>2,000 mg/kg	rat	OECD Guideline 402	ECHA

##### Skin corrosion/irritation

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

##### Serious eye damage/eye irritation

Causes serious eye irritation.

(ECHA, OECD Guideline 437)

##### Respiratory or skin sensitization

###### Skin sensitization

Classification could not be established because:

Data are lacking, inconclusive, or conclusive but not sufficient for classification.

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## **Respiratory sensitization**

Classification could not be established because:  
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

## **Germ cell mutagenicity**

Classification could not be established because:  
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

## **Carcinogenicity**

### **IARC Monographs**

not listed

### **National Toxicology Program (United States)**

not listed

### **OSHA Carcinogens**

Not listed.

## **Reproductive toxicity**

Classification could not be established because:  
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

## **Specific target organ toxicity - single exposure**

Classification could not be established because:  
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

## **Specific target organ toxicity - repeated exposure**

Classification could not be established because:  
Data are lacking, inconclusive, or conclusive but not sufficient for classification.

## **Aspiration hazard**

Shall not be classified as presenting an aspiration hazard.

## **11.2 Other information**

There is no additional information.

## **SECTION 12: Ecological information**

### **12.1 Toxicity**

#### **Aquatic toxicity (acute)**

No data available.

#### **Aquatic toxicity (chronic)**

No data available.

### **12.2 Persistence and degradability**

#### **Biodegradation**

No data available.

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## Persistence

No data available.

## 12.3 Bioaccumulative potential

n-octanol/water (log KOW) -1.8 – -0.2

## 12.4 Mobility in soil

No data available.

## 12.5 Results of PBT and vPvB assessment

According to the results of its assessment, this substance is not a PBT or a vPvB.

## 12.6 Other adverse effects

Data are not available.

## Remarks

Keep away from drains, surface and ground water.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Dispose of contents/container in accordance with local/regional/national/international regulations.

#### Sewage disposal-relevant information

Do not empty into drains.

#### Waste treatment of containers/packages

Completely emptied packages can be recycled.  
Handle contaminated packages in the same way as the substance itself.

#### Remarks

Please consider the relevant national or regional provisions.

## SECTION 14: Transport information

### 14.1 UN number

DOT UN3077

IMDG-Code UN3077



ICAO-TI UN3077

### 14.2 UN proper shipping name

DOT Environmentally hazardous substance, solid,  
n.o.s.

IMDG-Code ENVIRONMENTALLY HAZARDOUS SUBSTANCE,  
SOLID, N.O.S.

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<b>ICAO-TI</b>	Environmentally hazardous substance, solid, n.o.s.
<b>Technical name</b>	trizinc dicitrate dihydrate
<b>14.3 Transport hazard class(es)</b>	
<b>DOT</b>	9
<b>IMDG-Code</b>	9
<b>ICAO-TI</b>	9
<b>14.4 Packing group</b>	
<b>DOT</b>	III
<b>IMDG-Code</b>	III
<b>ICAO-TI</b>	III
<b>14.5 Environmental hazards</b>	hazardous to the aquatic environment
<b>14.6 Special precautions for user</b>	-
<b>14.7 Transport in bulk according to IMO instruments</b>	-
<b>14.8 Information for each of the UN Model Regulations</b>	
<b>Transport of dangerous goods by road or rail (49 CFR US DOT) Additional information</b>	
Particulars in the shipper's declaration	UN3077, Environmentally hazardous substance, solid, n.o.s., (trizinc dicitrate dihydrate), 9, III
Danger label(s)	9, fish and tree
	
Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	8, 146, 335, 384, 441, A112, B54, B120, IB8, IP3, N20, N91, T1, TP33
ERG No	171
<b>International Maritime Dangerous Goods Code (IMDG) Additional information</b>	
Marine pollutant	yes (hazardous to the aquatic environment) (trizinc dicitrate dihydrate)
Danger label(s)	9, fish and tree
	

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Special provisions (SP)	274, 335, 966, 967, 969
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
EmS	F-A, S-F
Stowage category	A

## International Civil Aviation Organization (ICAO-IATA/DGR) Additional information

Environmental hazards	yes (hazardous to the aquatic environment)
Danger label(s)	9, fish and tree



Special provisions (SP)	A97, A158, A179, A197, A215
Excepted quantities (EQ)	E1
Limited quantities (LQ)	30 kg

## SECTION 15: Regulatory information

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

#### National regulations (United States)

**Toxic Substance Control Act (TSCA)**                      Substance is listed (ACTIVE)

#### Superfund Amendment and Reauthorization Act (SARA TITLE III)

**The List of Extremely Hazardous Substances and Their Threshold Planning Quantities (EPCRA Section 302, 304)**

Not listed

#### Specific Toxic Chemical Listings (EPCRA Section 313)

Toxics Release Inventory: Specific Toxic Chemical Listings				
Name of substance	Name acc. to inventory	CAS No	Remarks	Effective date
trizinc dicitrate dihydrate	zinc compounds		-	1987-01-01

#### Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

**List of Hazardous Substances and Reportable Quantities (CERCLA section 102a) (40 CFR 302.4)**

Not listed

#### Clean Air Act

Not listed

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## Right to Know Hazardous Substance List

### Cleaning Product Right to Know Act Substance List (CA-RTK)

Not listed

### Toxic or Hazardous Substance List (MA-TURA)

Name of substance	Name acc. to inventory	CAS No	DEP CODE	PBT / HHS / LHS	PBT / HHS Thres hold	De Minimis Concentration Threshold
trizinc dicitrate dihydrate	Zinc Compounds	-	1039	-	-	1.0 %

### Hazardous Substances List (MN-ERTK)

Not listed

### Hazardous Substance List (NJ-RTK)

Name of substance	Name acc. to inventory	CAS No	Remarks	Classifications	Listed in	Substance number	DOT number
trizinc dicitrate dihydrate	zinc compounds	-	-		3 6 8 17 18 20	3012	3082

#### Legend

- 17 "2008 Emergency Response Guidebook," Research and Special Programs Administration, U.S. Department of Transportation, 2008.
- 18 List of Toxics Release Inventory Chemicals, Section 313, Emergency Planning and Community Right to Know Act (EPCRA), Toxics Release Inventory (TRI) Program, U.S. Environmental Protection Agency, 40 CFR 372.65, July 1, 2008.
- 20 List of Hazardous Substances and Reportable Quantities (RQ) , Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), U.S. Environmental Protection Agency, 40 CFR 302, Table 302.4, July 1, 2008.
- 3 Office of Hazardous Materials Safety, Research and Special Programs Administration, U.S. Department of Transportation, 49 CFR 172.101-Hazardous Materials Table, October 1, 2008.
- 6 "Environmental Hazardous Substance List," New Jersey Department of Environmental Protection, N.J.A.C. 7:1G-2, as printed in the Community Right to Know Survey Instruction Book, 2008.
- 8 Integrated Risk Information System (IRIS) Database for Risk Assessment, Office of Research and Development, National Center for Environmental Assessment, U.S. Environmental Protection Agency (EPA), September 2008.

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## Hazardous Substance List (Chapter 323) (PA-RTK)

Name acc. to inventory	CAS No	Classification
ZINC	7440-66-6	*, E

### Legend

\* Any compound of this substance is also an environmental hazard

E Environmental hazard

## Hazardous Substance List (RI-RTK)

Not listed

## California Environmental Protection Agency (Cal/EPA): Proposition 65 - Safe Drinking Water and Toxic Enforcement Act of 1987

Not listed

## Drug precursors, Chemicals designated within the Controlled Substances Act, 21 U.S.C. § 802, paragraphs 34 (list I) and 35 (list II)

Not listed

## SECTION 16: Other information, including date of preparation or last revision

Date of preparation: 2023-06-15

### Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
29 CFR 1910.1000	29 CFR 1910.1000, Tables Z-1, Z-2, Z-3 - Occupational Safety and Health Standards: Toxic and Hazardous Substances (permissible exposure limits)
49 CFR US DOT	49 CFR U.S. Department of Transportation
Cal/OSHA PEL	California Division of Occupational Safety and Health (Cal/OSHA): Permissible Exposure Limits (PELs)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
DEP CODE	Department of Environmental Protection Code
DGR	Dangerous Goods Regulations (see IATA/DGR)
DOT	Department of Transportation (USA)
EmS	Emergency Schedule
ERG No	Emergency Response Guidebook - Number
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
HHS	Higher hazard substance
IARC	International Agency for Research on Cancer
IARC Mono-graphs	IARC Monographs on the Evaluation of Carcinogenic Risks to Humans

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Abbr.	Descriptions of used abbreviations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LHS	Lower hazard substance
NIOSH REL	National Institute for Occupational Safety and Health (NIOSH): Recommended Exposure Limits (RELs)
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
PEL	Permissible exposure limit
ppm	Parts per million
STEL	Short-term exposure limit
TWA	Time-weighted average
vPvB	Very Persistent and very Bioaccumulative

## Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200.

Transport of dangerous goods by road or rail (49 CFR US DOT).

International Maritime Dangerous Goods Code (IMDG).

Dangerous Goods Regulations (DGR) for the air transport (IATA).

## List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H319	Causes serious eye irritation.

## Responsible for the safety data sheet

Chemical Regulatory Compliance Com- Telephone: +1 (630) 410-1660  
 pany e-Mail: GHS@crc-us.com  
 Jasper, GA Website: www.crc-us.com  
 USA

## Disclaimer

This information is based upon the present state of our knowledge.

This SDS has been compiled and is solely intended for this product.