

Zinc Sulfate Heptahydrate

Version number: 2.0

SECTION 1: Identification

1.1 Product identifier

Identification of the substance	zinc sulfate heptahydrate
Trade name	<u>Zinc Sulfate Heptahydrate</u>
CAS number	7446-20-0

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

Relevant identified uses	Textile auxiliary Additive in feedingstuffs Food additive Laboratory and analytical use Stain
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1.3 Details of the supplier of the safety data sheet

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

Emergency information	800-535-5053 (Infotrac)
As above or nearest toxicological information center.	

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.1O	acute toxicity (oral)	4	Acute Tox. 4	H302
A.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
B.cD	combustible dust	Comb. Dust	cD	OSHA003

For full text of abbreviations: see SECTION 16

2.2 Label elements

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

Zinc Sulfate Heptahydrate

Version number: 2.0

Signal word danger

Pictograms

GHS05, GHS07



Hazard statements

H302 Harmful if swallowed.
H318 Causes serious eye damage.
OSHA003 May form combustible dust concentrations in air.

Precautionary statements

P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/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.
P310 Immediately call a poison center/doctor.
P330 Rinse mouth.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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	zinc sulfate heptahydrate
Identifiers	
CAS No	7446-20-0
Molecular formula	$\text{ZnSO}_4 \cdot 7 \text{H}_2\text{O}$
Molar mass	287.5 g/mol

SECTION 4: First-aid measures

4.1 Description of first-aid measures

General notes

Take off immediately all contaminated clothing.
Symptoms may develop several hours following exposure; medical observation therefore necessary for at least 48 hours.

Zinc Sulfate Heptahydrate

Version number: 2.0

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.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Rinse immediately carefully and thoroughly with eye shower or water.

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

Get immediate medical advice/attention.

Following ingestion

Rinse mouth. Do not induce vomiting.

Call a physician in any case.

Notes for the doctor

None.

4.2 Most important symptoms and effects, both acute and delayed

Harmful if swallowed.

Causes serious eye damage.

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

water, foam, alcohol resistant foam, fire extinguishing powder, coordinate firefighting measures to the fire surroundings

Unsuitable extinguishing media

None

5.2 Special hazards arising from the substance or mixture

Hazardous decomposition products: Section 10.

Hazardous combustion products

sulfur oxides (SO_x), zinc oxide

5.3 Advice for firefighters

Non-combustible.

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

chemical protection suit, Self-contained breathing apparatus (SCBA)

Zinc Sulfate Heptahydrate

Version number: 2.0

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.

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

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

Knock down dust with water spray.

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

Covering of drains.

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.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Do not get in eyes, on skin, or on clothing.

Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation.

Keep container tightly closed and dry.

Specific notes/details

Danger of dust explosion.

Zinc Sulfate Heptahydrate

Version number: 2.0

Measures to protect the environment

Avoid release to the environment.

Do not empty into drains; dispose of this material and its container at hazardous or special waste collection point.

Advice on general occupational hygiene

Do not eat, drink and smoke in work areas.

Remove contaminated clothing and protective equipment before entering eating areas.

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Wash thoroughly after handling.

Preventive skin protection (barrier creams/ointments) is recommended.

7.2 Conditions for safe storage, including any incompatibilities

Flammability hazards

None.

Incompatible substances or mixtures

Incompatible materials: see section 10.

Protect against external exposure, such as

heat, humidity

Consideration of other advice

Keep container tightly closed and in a well-ventilated place.

Keep container dry.

Specific designs for storage rooms or vessels

Keep container tightly closed and in a well-ventilated place.

Packaging compatibilities

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

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limit values (Workplace Exposure Limits)

No constituent of the product currently has a known exposure limit.

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.

Zinc Sulfate Heptahydrate

Version number: 2.0

Hand protection

Protective gloves		
Material	Material thickness	Breakthrough times of the glove material
NBR: acrylonitrile-butadiene rubber	≥ 0,35 mm	>480 minutes (permeation: level 6)
NR: natural rubber, latex	≥ 0,5 mm	>480 minutes (permeation: level 6)
CR: chloroprene (chlorobutadiene) rubber	≥ 0,5 mm	>480 minutes (permeation: level 6)
IIR: isobutene-isoprene (butyl) rubber	≥ 0,5 mm	>480 minutes (permeation: level 6)
FKM: fluoro-elastomer	≥ 0,4 mm	>480 minutes (permeation: level 6)
PVC: polyvinyl chloride	≥ 0,5 mm	>480 minutes (permeation: level 6)

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.

P2 (filters at least 94 % of airborne particles, color code: White).

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

Physical state	solid (crystalline)
Color	white
Odor	odorless
Odor threshold	not determined

Other safety parameters

pH (value)	4 – 6 (in aqueous solution: 50 g/l, 20 °C)
Melting point/freezing point	not determined
Boiling point or initial boiling point and boiling	not determined

Zinc Sulfate Heptahydrate

Version number: 2.0

range

Flash point	not applicable
Evaporation rate	not determined
Flammability (solid, gas)	non-combustible
Explosive limits	not determined
Explosion limits of dust clouds	not determined
Vapor pressure	not determined
Density and/or relative density	
Density	1.98 g/cm ³ at 22 °C (EU method A.3)
Relative density	1.97 (water = 1)
Relative vapour density	not relevant (solid)
Solubility(ies)	
Water solubility	580 g/l at 25 °C
Partition coefficient	
n-octanol/water (log KOW)	not relevant (inorganic)
Auto-ignition temperature	not determined
Decomposition temperature	100 °C
Viscosity	not relevant (solid)
Explosive properties	none
Oxidizing properties	none
Information for relevant hazard classes according to GHS	there is no additional information

9.2 Other information there is no additional information

SECTION 10: Stability and reactivity

10.1 Reactivity

No information available.

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

Zinc Sulfate Heptahydrate

Version number: 2.0

No known hazardous reactions.

10.4 Conditions to avoid

Keep away from heat.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Sulfur dioxide (SO₂), Zinc oxide

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 (dermal).

Harmful if swallowed.

Exposure route	Endpoint	Value	Species	Method	Source
oral	LD50	1,710 mg/kg	rat, male	OECD Guideline 401	ECHA
oral	LD50	926 mg/kg	mouse, male	OECD Guideline 401	ECHA
oral	LD50	2,280 mg/kg	rat, male	-	ECHA
dermal	LD0	>2,000 mg/kg	rat	OECD Guideline 402	ECHA

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitization

Skin sensitization

Shall not be classified as a skin sensitizer.

Respiratory sensitization

Classification could not be established because:

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

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Zinc Sulfate Heptahydrate

Version number: 2.0

Carcinogenicity

Shall not be classified as carcinogenic.

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)

Based on available data, the classification criteria are not met.

Endpoint	Exposure time	Value	Species	Method	Source
LC50	48 h	131 µg/l	daphnia magna	OECD Guideline 202	ECHA
LC50	96 h	330 µg/l	fathead minnow (Pimephales promelas)	-	ECHA
EC50	48 h	1.4 mg/l	daphnia magna	OECD Guideline 202	ECHA

Aquatic toxicity (chronic)

Based on available data, the classification criteria are not met.

Endpoint	Exposure time	Value	Species	Method	Source
EC50	3 h	5.2 mg/l	activated sludge of a predominantly domestic sewage	OECD Guideline 209	ECHA

Zinc Sulfate Heptahydrate

Version number: 2.0

Endpoint	Exposure time	Value	Species	Method	Source
NOEC	72 h	15 µg/l	algae	-	ECHA
NOEC	25 d	25 µg/l	rainbow trout (Oncorhynchus mykiss)	-	ECHA
NOEC	50 d	31 µg/l	Haliotis rufescens, Red Abalone, Haliotidae	-	ECHA
NOEC	4 h	0.1 mg/l	activated sludge of a predominantly domestic sewage	OECD Guideline 209	ECHA
LOEC	30 d	51 µg/l	Jordanella floridae	-	ECHA
LOEC	3 d	20 µg/l	Alge (Asterionella japonica, Diatom, Fragilariaceae)	-	ECHA
growth (EbCx) 10%	3 d	11.2 µg/l	Alge (Asterionella japonica, Diatom, Fragilariaceae)	-	ECHA
growth (EbCx) 10%	23 d	80 µg/l	Sterechinus neumayeri, Antarctic Sea Urchin, Echinidae	-	ECHA

12.2 Persistence and degradability

Biodegradation

The study does not need to be conducted because the substance is inorganic.

Persistence

The study does not need to be conducted because the substance is inorganic.

12.3 Bioaccumulative potential

The substance is not bioaccumulative.

n-octanol/water (log KOW)

not relevant
(inorganic)

BCF

69.48
(ECHA)

12.4 Mobility in soil

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

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.

Zinc Sulfate Heptahydrate

Version number: 2.0

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.

ICAO-TI Environmentally hazardous substance, solid,
n.o.s.

Technical name zinc sulfate heptahydrate

14.3 Transport hazard class(es)

DOT 9

IMDG-Code 9

ICAO-TI 9

14.4 Packing group

DOT III

IMDG-Code III

ICAO-TI III

14.5 Environmental hazards

hazardous to the aquatic environment

14.6 Special precautions for user

-

Zinc Sulfate Heptahydrate

Version number: 2.0

14.7 Transport in bulk according to IMO instruments

14.8 Information for each of the UN Model Regulations

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

Particulars in the shipper's declaration UN3077, Environmentally hazardous substance, solid, n.o.s., (zinc sulfate heptahydrate), 9, III

Reportable quantity (RQ) 1,000 lbs
(454 kg)
(zinc sulfate heptahydrate)

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

Remarks

49 CFR § 171.4 (c) Exceptions:

(1) Except when all or part of the transportation is by vessel, the requirements of this subchapter specific to marine pollutants do not apply to non-bulk packagings transported by motor vehicle, rail car or aircraft.

(2) Single or combination packagings containing a net quantity per single or inner packaging of 5 L or less for liquids or having a net mass of 5 kg or less for solids, are not subject to any other requirements of this subchapter provided the packagings meet the general requirements in §§ 173.24 and 173.24a.

International Maritime Dangerous Goods Code (IMDG) Additional information

Marine pollutant yes
(hazardous to the aquatic environment)
(zinc sulfate heptahydrate)

Danger label(s) 9, fish and tree



Special provisions (SP) 274, 335, 375, 966, 967, 969

Excepted quantities (EQ) E1

Limited quantities (LQ) 5 kg

EmS F-A, S-F

Zinc Sulfate Heptahydrate

Version number: 2.0

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
zinc sulfate heptahydrate	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)

Name of substance	Name acc. to inventory	CAS No	Re- marks	Stat- utory code	Final RQ pounds (Kg)
zinc sulfate heptahydrate	zinc sulfate	7733-02-0	-	1	1000 (454)

Legend

1 "1" indicates that the statutory source is section 311(b)(2) of the Clean Water Act

Clean Air Act

Not listed

Zinc Sulfate Heptahydrate

Version number: 2.0

Right to Know Hazardous Substance List

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
zinc sulfate heptahydrate	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
zinc sulfate heptahydrate	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.

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

Zinc Sulfate Heptahydrate

Version number: 2.0

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: 2023-01-10

Date of last revision: 2025-07-17.

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
49 CFR US DOT	49 CFR U.S. Department of Transportation
BCF	Bioconcentration factor
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)
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
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
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
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing

Zinc Sulfate Heptahydrate

Version number: 2.0

Abbr.	Descriptions of used abbreviations
	50 % lethality during a specified time interval
LD50	Lethal Dose 50 %: the LD50 corresponds to the dose of a tested substance causing 50 % lethality during a specified time interval
LHS	Lower hazard substance
LOEC	Lowest Observed Effect Concentration
NOEC	No Observed Effect Concentration
OSHA	Occupational Safety and Health Administration (United States)
PBT	Persistent, Bioaccumulative and Toxic
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

OSHA Hazard Communication Standard (HCS), 29 CFR 1910.1200 (May 20, 2024 eff. July 19, 2024).
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
H302	Harmful if swallowed.
H318	Causes serious eye damage.
OSHA003	May form combustible dust concentrations in air.

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.