

ZINC SULPHATE MONOHYDRATE

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SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

ZINC SULPHATE MONOHYDRATE
Zinc sulfate monohydrate; ZnSO4.H2O
CAS: 7446-19-7

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Micronutrient fertilizer/soil amendment, animal feed additive, viscose rayon manufacture, electrolyte for zinc electroplating, wood preservative, chemical reagent. For industrial user only.
Uses advised against: All uses not specified in this section or in section 7.3.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Acute Tox. 4	Acute oral toxicity, Category 4, H302
Eye Dam. 1	Serious eye damage, Category 1, H318
Aquatic Acute 1	Hazardous to the aquatic environment, acute hazard, Category 1, H400

2.2 GHS label elements, including precautionary statements:

GHS: Danger

Hazard statements:

Acute Tox. 4: H302 – Harmful if swallowed.
Eye Dam. 1: H318 – Causes serious eye damage.
Aquatic Acute 1: H400 – Very toxic to aquatic life.

Precautionary statements:

P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P273: Avoid release to the environment.
P280: Wear protective gloves/eye protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
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 or doctor/physician.
P330: Rinse mouth.
P501: Dispose of contents/container in accordance with local/national regulations.

2.3 Other hazards which do not result in classification:

Not relevant

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Zinc sulphate monohydrate
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7446-19-7	Zinc sulphate monohydrate — Acute Tox. 4: H302; Eye Dam. 1: H318; Aquatic Acute 1: H400 – Danger	≥ 98%

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance, showing the SDS of this product.

By inhalation:

Remove the person affected from the area of exposure and provide fresh air. Seek medical attention if respiratory irritation persists.

By skin contact:

Remove contaminated clothing. Rinse skin thoroughly with plenty of water and soap.

By eye contact:

Rinse eyes immediately with plenty of lukewarm water for at least 15 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek immediate medical/ophthalmological attention – the product causes serious eye damage.

By ingestion/aspiration:

Rinse mouth with water. Do NOT induce vomiting unless directed by medical personnel. Call a Poison Information Centre or doctor if the person feels unwell.

4.2 Most important symptoms/effects, acute and delayed:

Harmful if swallowed; may cause nausea, vomiting and abdominal pain. Causes serious eye damage. Acute and delayed effects are further indicated in section 11.

4.3 Indication of immediate medical attention and special treatment needed, if necessary:

Treat symptomatically. No specific antidote. Contact a Poison Information Centre in case of significant ingestion.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Water spray, foam, dry chemical powder, carbon dioxide – select per surrounding fire.

Unsuitable: None known.

5.2 Specific hazards arising from the chemical:

Non-combustible solid. Does not itself burn. May release sulfur oxide fumes and zinc oxide fume on strong thermal decomposition.

5.3 Special protective actions for fire-fighters:

Wear self-contained breathing apparatus and full protective clothing where the product is involved in a fire.

Additional provisions:

Cool fire-exposed containers with water spray if safe to do so. Contain fire-fighting water to prevent environmental discharge.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Avoid contact with skin and eyes, and avoid ingestion. Use personal protective equipment described in section 8. Avoid generating dust.

For emergency responders:

Wear protective equipment described in section 8. Keep unprotected persons away.

6.2 Environmental precautions:

Avoid discharge into drains, soil or water courses – the product is very toxic to aquatic life. Notify the relevant authority in case of significant environmental release.

6.3 Methods and materials for containment and cleaning up:

Sweep or vacuum up (avoid dust dispersal) into a suitable, labelled container for disposal. Contain and collect wash water; do not flush to drains.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A. General precautions for safe use:

Avoid contact with skin and eyes, avoid ingestion, and avoid breathing dust. Handle with adequate ventilation.

B. Technical recommendations for the prevention of fires and explosions:

Not applicable – the product is non-combustible and non-explosive.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke while handling. Wash hands thoroughly after handling.

D. Technical recommendations to prevent environmental risks:

Prevent product or spillage from reaching drains, soil or water courses.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Storage temperature	Ambient, dry conditions
Storage condition	Tightly closed containers
Shelf life	Typical value – refer to current specification sheet

B. General conditions for storage:

Store away from incompatible materials (section 10). Keep containers tightly closed, in a cool, dry, well-ventilated area, separated from foodstuffs and animal feed (except where intentionally used as a feed additive under appropriate controls).

7.3 Specific end use(s):

Except for the instructions already specified, it is not necessary to provide any special recommendation regarding the uses of this product.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

No substance-specific occupational exposure limit is established in India for zinc sulphate. General guidance limits for particulates not otherwise classified (PNOC) are provided below:

Identification	Occupational Exposure Limit Type	Value
Particulates not otherwise classified (PNOC)	Total dust, TWA (8 hrs)	10 mg/m³
	Respirable fraction, TWA (8 hrs)	3 mg/m³

8.2 Appropriate engineering controls:

Use local exhaust ventilation where dust is generated, in order to keep exposure below the limits in 8.1. Provide eyewash facilities near the work area.

B. Respiratory protection:

Use a particulate filtering respirator where dust exposure limits may be exceeded.

C. Specific protection for the hands:

Chemical-resistant gloves (e.g. nitrile or PVC) recommended.

D. Eye and face protection:

Chemical splash goggles mandatory – the product causes serious eye damage.

E. Bodily protection:

Standard industrial workwear; protective coveralls recommended for prolonged exposure.

F. Additional emergency measures:

Emergency eyewash station and washing facilities should be readily available near the work area.

Environmental exposure controls:

Avoid environmental spillage of the product and its container. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Solid (crystalline powder/granules)
Appearance	Crystalline solid
Color	White
Odor	Odorless
Odour threshold	Not applicable
Volatility	
Boiling point at atmospheric pressure	Decomposes before boiling
Vapour pressure at 20°C	Negligible
Evaporation rate at 20°C	Not relevant (solid)
Product Description	
Density / Relative density at 20°C	2.00 g/cm³
pH (5% aqueous solution)	4.4 – 5.0 (acidic)
Solubility in water at 20°C	Highly soluble (> 75 g/100 mL)
Partition coefficient n-octanol/water	Not applicable (inorganic salt)
Decomposition temperature	≈ 100°C (loses water of crystallisation); decomposes further at > 500°C
Melting point/freezing point	≈ 100°C (with loss of water of crystallisation)
Flammability	
Flash Point	Not applicable (solid, non-flammable)
Flammability (solid, gas)	Non-flammable
Autoignition temperature	Not applicable
Lower / Upper flammability limit	Not applicable
Particle Characteristics	
Median particle size	Typical value – refer to current specification sheet

Values above are typical for the commercial grade; refer to current specification sheet for guaranteed values.

9.2 Other information:

Explosive properties	Not explosive
Oxidising properties	Not an oxidiser
Corrosive to metals	Not corrosive
Self-heating	Not self-heating
Water reactivity	Dissolves readily; not violently reactive

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

No significant reactivity hazards known under normal conditions. Reacts with strong alkalis (forms zinc hydroxide precipitate) and with lead/barium salts.

10.2 Chemical stability:

Chemically stable under the indicated conditions of storage, handling and use.

10.3 Possibility of hazardous reactions:

Under the specified conditions, hazardous reactions are not expected.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Avoid strong heating (decomposition)	Not applicable	Avoid prolonged moisture exposure

10.5 Incompatible materials:

Strong Alkalis	Lead / Barium Salts	Strong Oxidisers
Avoid direct contact	Avoid direct contact (forms insoluble sulfates)	Avoid direct contact

10.6 Hazardous decomposition products:

Sulfur oxide fumes and zinc oxide fume on strong thermal decomposition.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result depending on the means of exposure:

A. Ingestion (acute effect):

Harmful if swallowed; may cause nausea, vomiting, abdominal pain and irritation of the gastrointestinal tract.

B. Inhalation (acute effect):

Dust may cause irritation to the respiratory tract.

C. Contact with skin and eyes (acute effect):

Causes serious eye damage. May cause mild to moderate skin irritation on prolonged contact.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. Not listed by IARC.

E. Sensitizing effects:

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure:

Classification criteria are not met based on available data.

G. Specific target organ toxicity (STOT) – repeated exposure:

Classification criteria are not met based on available data.

H. Aspiration hazard:

Not applicable (solid).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Zinc sulphate monohydrate CAS: 7446-19-7	LD50 oral: 1237 mg/kg bw (expressed as ZnSO4)	Rat
	LD50 dermal: > 2000 mg/kg bw	Rabbit

SECTION 12: ECOLOGICAL INFORMATION

Very toxic to aquatic life.

12.1 Toxicity:

Identification	Acute Toxicity	Species	Genus
Zinc sulphate (as Zn) CAS: 7446-19-7	LC50: 0.1 – 1.0 mg/L (96h, as Zn)	Oncorhynchus mykiss	Fish
	EC50: 0.1 – 0.6 mg/L (48h, as Zn)	Daphnia magna	Crustacean

12.2 Persistence and degradability:

Inorganic substance; the concept of biodegradability is not applicable.

12.3 Bioaccumulative potential:

Zinc is an essential trace element; bioaccumulation is physiologically regulated in most organisms but may occur at elevated environmental concentrations.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	High (soluble salt)	High (soluble salt)

12.5 Results of PBT and vPvB assessment:

Not applicable (inorganic substance).

12.6 Other adverse effects:

Toxic to aquatic organisms even at low concentrations; avoid uncontrolled release to the environment.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dissolve/dilute and neutralise (e.g. with lime) under controlled conditions, then dispose of via a licensed waste disposal contractor in accordance with local and national regulations. Do not discharge directly to drains or water courses.

Refer to national and local regulations on waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR / RID):

14.1 UN number	Not restricted for standard packaged quantities under ADR/RID
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	Yes (hazardous to the aquatic environment – see section 12)
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG):

14.1 UN number	UN3077 (for bulk/marine-pollutant shipments)
14.2 UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc sulphate)
14.3 Transport hazard class(es)	9
14.4 Packing group	III
14.5 Marine pollutant	Yes
14.6 Special precautions for user	EmS Codes: F-A, S-F
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO):

14.1 UN number	Not restricted for standard packaged quantities
14.2 UN proper shipping name	Non-applicable
14.3 Transport hazard class(es)	Non-applicable
14.4 Packing group	Non-applicable
14.5 Environmental hazard	Yes
14.6 Special precautions for user	Physico-chemical properties: see section 9
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

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

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product.

Other legislation:

Manufacture, Storage and Import of Hazardous Chemicals Rules 1989
The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
Fertilizer (Control) Order, 1985 – as applicable to micronutrient fertilizer grades

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

- H302: Harmful if swallowed.
- H318: Causes serious eye damage.
- H400: Very toxic to aquatic life.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Minimal training is recommended to prevent industrial risks for staff using this product, in order to facilitate their comprehension and interpretation of this safety data sheet, as well as the label on the product.

Principal bibliographical sources:

The United Nations Economic Commission for Europe (UNECE); publicly available GHS classification references for the listed CAS number.

Abbreviations and acronyms:

ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET