

Zinc Sulphate

Safety data sheet in the 16-section GHS format · CAS 7446-19-7

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1. Identification of the substance and of the supplier

Product name	Zinc Sulphate
Synonyms	zinc sulphate monohydrate, zinc sulphate heptahydrate, ZnSO ₄ , zinc sulphate 33, zinc sulphate 21
C.A.S. number	7446-19-7 (monohydrate, ZnSO ₄ .H ₂ O). Heptahydrate is CAS 7446-20-0; anhydrous is CAS 7733-02-0. All three share the EU harmonised entry for zinc sulphate.
Molecular formula	ZnSO ₄ .H ₂ O (monohydrate); ZnSO ₄ .7H ₂ O (heptahydrate)
Grade supplied	Mono 33% Zn / hepta 21% Zn (FCO)
Product group	Industrial Salts & Inorganics
Identified uses	Agricultural micronutrient, Animal feed, Viscose rayon, Electroplating, Mineral flotation, Wood & water treatment
Supplier	Velora Chemicals Private Limited
Emergency contact	Medical, fire or spill emergency — call the emergency services first: 112 (all-India), 101 fire, 108 ambulance. Velora Chemicals Private Limited does not at present operate a 24-hour chemical emergency advice line, and this sheet does not pretend otherwise. Every consignment despatched by road carries an emergency information panel under rule 134 of the Central Motor Vehicles Rules 1989 bearing a number from which expert advice on this material can be obtained, and the producer's safety data sheet issued with the consignment carries the producer's own 24-hour number where one is operated. For product, grade and documentation queries in business hours: +91 99255 22674.

2. Hazards identification

GHS signal word	Danger
Hazard classification	EU harmonised classification (Annex VI to CLP, entry for zinc sulphate, confirmed via ECHA in PubChem): Acute Tox. 4 - H302; Eye Dam. 1 - H318; Aquatic Acute 1 - H400; Aquatic Chronic 1 - H410. Signal word Danger; pictograms GHS07, GHS05 and GHS09. ECHA C&L Inventory notifier agreement is very high and consistent with the harmonised entry: H318 reported by 99.8 %, H400 by 96.6 %, H302 by 94.2 % and H410 by 94.2 % of 928 reports. Note that H318 is 'Causes serious eye damage' (Eye Dam. 1, irreversible) and must not be downgraded to the eye irritation statement H319.

3. Composition / information on ingredients

Substance	Zinc Sulphate
C.A.S. number	7446-19-7 (monohydrate, ZnSO ₄ .H ₂ O). Heptahydrate is CAS 7446-20-0; anhydrous is CAS 7733-02-0. All three share the EU harmonised entry for zinc sulphate.
Molecular weight	179.45 g/mol (monohydrate); 287.54 g/mol (heptahydrate); 161.47 g/mol (anhydrous)
Composition	Mono 33% Zn / hepta 21% Zn (FCO)

4. First-aid measures

Eye contact	Serious eye damage hazard. Rinse cautiously and continuously with water for at least 15 minutes, holding the eyelids apart. Remove contact lenses if present and easy to do, then continue rinsing. Call a physician or take the person to an eye specialist immediately - damage may be irreversible.
Skin contact	Remove contaminated clothing. Wash the affected skin with soap and abundant water. Get medical attention if irritation develops or persists.
Inhalation	Remove the person to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, give oxygen and get medical help. Get medical attention if symptoms persist.
Ingestion	Rinse the mouth with water. Do not give anything by mouth to an unconscious person. Do not induce vomiting. Call a poison centre or doctor if the person feels unwell. Harmful if swallowed (H302).

5. Fire-fighting measures

Flash point	Not flammable
Suitable extinguishing media	Water fog, foam, dry chemical powder or carbon dioxide, chosen to suit the surrounding fire. The substance itself does not contribute fuel.
Unsuitable extinguishing media	Do not use a high-pressure water jet: it will spread the material and the fire.
Special hazards arising from the substance	Hazardous gases and decomposition products may be formed in a fire, from this substance or from its packaging and the materials stored with it. Packaging and pallets are themselves a substantial fire load. That is true even though the contents do not contribute fuel.
Advice for fire-fighters	Fire-fighters must wear self-contained breathing apparatus and full protective clothing. Keep unnecessary personnel away and upwind. Prevent firefighting run-off from entering drains, surface water or groundwater.

6. Accidental release measures

Keep unnecessary personnel away and upwind, and ventilate. Wear the protective equipment in section 8, including respiratory protection, before approaching. Eliminate ignition sources and prohibit smoking before approaching. Avoid raising dust, and never blow a spilled powder down with compressed air. Dry-collect — vacuum with a HEPA-filtered unit, or sweep gently without raising dust — into labelled, closable containers for disposal under section 13. A spill inside a vessel, tank, silo, container or pit is a confined-space job: test the atmosphere and work under permit. A fine powder makes a floor slippery, especially once wet, so treat every wetted surface as slippery until it has been washed and dried. Prevent entry to drains, surface water and groundwater. Do not return spilled material to the original container; a damaged bag should be overpacked into a labelled outer rather than decanted into an unmarked one.

7. Handling and storage

- Store in a dry, covered store on pallets. Heptahydrate is the more sensitive of the two: it effloresces and loses crystal water in dry heat from around 30 °C, and it also picks up moisture and cakes in humid weather. Monohydrate is the more stable form in storage and in transit, which is part of why it is the practical choice for blending and for long hauls. Keep bags sealed and off damp floors and rotate stock for both.
- Zinc salts are toxic to aquatic life, and zinc sulphate is commonly shipped as UN 3077, Class 9, environmentally hazardous substance, solid, n.o.s., packing group III. Confirm the classification on the shipping document for the specific grade and hydrate rather than assuming it is unregulated.
- Never let spillage, washings or spent solution reach a storm drain or a watercourse. Collect dry spillage; treat aqueous effluent through the zinc-removal step in your effluent plant.

- Zinc sulphate causes serious eye damage — GHS Eye Dam. 1, H318, not simple irritation — and is harmful if swallowed (H302); the dust also irritates skin and the respiratory tract. Use tight-fitting chemical goggles rather than safety glasses, gloves, and dust extraction at tipping and blending points. Eye contact needs immediate prolonged irrigation and medical attention.
- Supply for agricultural use in India is regulated under the Fertiliser (Control) Order, 1985. Velora holds a certificate of registration under the Order and our registration particulars are provided with the quotation. Tell us the end use at the enquiry stage so the grade and the regulatory position are confirmed before anything is committed.

Storage: Store in a cool, dry, well-ventilated place with the container tightly closed. Keep away from strong oxidising agents. Protect the monohydrate from moisture (caking) and the heptahydrate from dry heat (efflorescence and loss of water of crystallisation, which shifts the assay). Bund or otherwise contain the storage area so that spills and wash water cannot reach drains, surface water or soil - the substance is very toxic to aquatic life with long-lasting effects.

8. Exposure controls / personal protection

Engineering controls. Enclose every transfer, tipping, bag-slitting and sampling point and fit local exhaust extraction at each, and keep airborne concentrations below the limit in force at the place of use. Provide an eyewash within reach of the working position, and a safety shower wherever the material is classified corrosive or irritant or is handled in quantity. Do not eat, drink or smoke in the handling area; wash before breaks. Where no limit is stated above, occupational exposure limits vary by jurisdiction: check the limit in force at the place of use and the producer's sheet for the grade supplied, and record which value your assessment adopted. Select eye, skin and respiratory protection on the strength of a measured or modelled exposure assessment, not on this sheet alone.

9. Physical and chemical properties

Appearance	Monohydrate: white to beige free-flowing crystalline powder or granules, odourless. Heptahydrate: colourless to white crystals, granules or crystalline powder, odourless; efflorescent in dry air.
Physical state	Solid (crystalline powder or granules)
Melting / freezing point	Neither hydrate has a true melting point - both lose water of crystallisation and then decompose. Monohydrate decomposes at about 238 C; heptahydrate loses water from about 100 C; anhydrous zinc sulphate decomposes at about 680 C (all PubChem/CRC). The figure of 100 C quoted as 'melting point' on some heptahydrate SDS (e.g. Loba Chemie) is a dehydration temperature, not a melt.
Boiling point	Not available (the substance decomposes before boiling)
Relative density	3.20 g/cm ³ (monohydrate); 1.957 g/cm ³ at 25 C (heptahydrate, CRC via PubChem; Loba Chemie SDS gives 1.97 g/cm ³); 3.8 g/cm ³ (anhydrous)
Solubility in water	Freely soluble in water. 57.7 g/100 g water at 25 C and 101 g/100 g water at 70 C (peer-reviewed data via PubChem); an additional PubChem entry gives 22 g/100 mL at 20 C. Insoluble in ethanol.
pH	4 to 6 in a 5 % w/w aqueous solution (Loba Chemie heptahydrate SDS). PubChem records that the aqueous solution is acid to litmus with pH about 4.5 for the heptahydrate. Aqueous solutions are acidic through hydrolysis of the zinc ion. A monohydrate-specific pH value with a stated concentration was not confirmed; expect the same acidic range on an equivalent zinc basis.
Flash point	Not flammable
Auto-ignition / ignition temperature	Not available
Explosive / dust-explosion properties	Not available
Vapour pressure	Not available

Vapour density	Not available
Partition coefficient (log Pow)	Not available
Particle characteristics	Not available
Molecular weight	179.45 g/mol (monohydrate); 287.54 g/mol (heptahydrate); 161.47 g/mol (anhydrous)

10. Stability and reactivity

Incompatible materials	Strong oxidising agents. Also avoid strong acids and strong bases, and moisture (the monohydrate is hygroscopic on exposure and the heptahydrate is efflorescent). Aqueous solutions are acidic and can corrode mild steel and galvanised surfaces.
Conditions to avoid	Store in a cool, dry, well-ventilated place with the container tightly closed. Keep away from strong oxidising agents. Protect the monohydrate from moisture (caking) and the heptahydrate from dry heat (efflorescence and loss of water of crystallisation, which shifts the assay). Bund or otherwise contain the storage area so that spills and wash water cannot reach drains, surface water or soil - the substance is very toxic to aquatic life with long-lasting effects.

11. Toxicological information

The health hazards classified for this substance are listed in section 2, and the corresponding first-aid measures in section 4. Numerical toxicological endpoints are not reproduced here: refer to the producer's safety data sheet for the grade supplied, and to the ECHA and PubChem entries for the substance.

12. Ecological information

Where section 2 or section 14 classifies this substance as hazardous to the aquatic environment, prevent any release to drains, surface water or groundwater and treat aqueous effluent before discharge. Otherwise, refer to the producer's sheet.

13. Disposal considerations

Dispose of the substance and its container through an authorised facility under the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 where the waste is scheduled under those Rules, and otherwise as non-hazardous industrial waste, in each case under the conditions of the State Pollution Control Board consent in force at the site. Whether a particular waste stream is scheduled depends on the substance and on what it has been mixed with, so classify the waste before consigning it. Do not reuse empty containers for any other purpose.

14. Transport information

UN number	UN 3077
Class	9 (Miscellaneous dangerous substances)
Packing group	III
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc sulphate). Confirmed for the monohydrate by the CDH Fine Chemical SDS and for the heptahydrate by the Loba Chemie SDS. The classification arises from the aquatic hazard (H400/H410), not from toxicity or corrosivity, so packages also require the environmentally hazardous substance mark.

15. Regulatory information

Supply in India is subject to the Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 where the substance is scheduled, and to any product-specific licensing named on the product page. Classification and labelling follow the GHS as adopted in the jurisdiction of use.

Note: The hydrate must be stated on every document: the monohydrate (CAS 7446-19-7, 179.45 g/mol, about 36 % Zn) and the heptahydrate (CAS 7446-20-0, 287.54 g/mol, about 22.7 % Zn) are the same chemical species at different water contents and are not interchangeable by weight. Quote assay on a declared hydrate basis. The EU harmonised Annex VI entry is written for zinc sulphate and covers the anhydrous and hydrated forms, so hazard classification does not change with hydrate, but the transport EHS marking and the 100 % substance concentration

statement do depend on the form supplied. Do not weaken H318 to H319 - the harmonised entry and 99.8 % of notifiers give serious eye damage. UN 3077 is assigned for the environmental hazard alone; small packages may qualify for the limited-quantity or the 2.5.3 aquatic-hazard exemptions under the UN Model Regulations, which must be assessed per consignment rather than assumed. The '100 C melting point' seen on heptahydrate SDS is a dehydration temperature.

16. Other information

Version	1.0
Date of issue	07 October 2026
Supersedes	No previous version
Regulatory basis as at the date of issue	EU CLP Regulation 1272/2008 as amended, including Annex VI harmonised classifications; UN Model Regulations and the IMDG Code Amendment 42-24, mandatory from 1 January 2026; ADR 2025; and, in India, the Manufacture, Storage and Import of Hazardous Chemical Rules 1989 and the Central Motor Vehicles Rules 1989.

How this sheet was compiled and what governs. This sheet was prepared by Velora Chemicals Private Limited as the supplier, from PubChem, the ECHA CLP inventory including Annex VI harmonised classifications, ILO International Chemical Safety Cards and published producer safety data sheets. Values that could not be confirmed from those sources are shown as "Not available" rather than estimated. **The producer's safety data sheet for the specific grade and lot supplied is the governing document** and is issued with the consignment; where the two differ, the producer's sheet prevails. This sheet carries no warranty of the properties of any particular batch. Velora Chemicals Private Limited is a bulk supplier and trader, not a manufacturer.

Sources consulted: <https://pubchem.ncbi.nlm.nih.gov/compound/24424>;
https://pubchem.ncbi.nlm.nih.gov/rest/pug_view/data/compound/24424/JSON?heading=GHS%20Classification;
https://pubchem.ncbi.nlm.nih.gov/rest/pug_view/data/compound/24424/JSON?heading=Experimental%20Properties;
<https://www.lobachemie.com/lab-chemical-msds/MSDS-ZINC-SULPHATE-HEPTAHYDRATE-CASNO-7446-20-06555-EN.aspx>;
https://www.cdhfinechemical.com/images/product/msds/115_657020919_ZincSulphateMonohydrate-CASNO-7446-19-7-MSDS.pdf