SAFETY DATA SHEET

FERROUS SULPHATE HEPTA HYDRATE

CAS No.: 7782-63-0

This Safety Data Sheet is issued by Suraj Chemicals as the distributor/supplier of record, based on manufacturer and published GHS / regulatory reference data for this substance. Users should also consult the specific manufacturer's SDS where available.

1. IDENTIFICATION

GHS Product identifier

FERROUS SULPHATE HEPTA HYDRATE
Iron(II) sulfate heptahydrate; Green vitriol; Copperas
CAS: 7782-63-0

Other means of identification

Not relevant

Recommended use of the chemical and restrictions on use

Relevant uses: Water/wastewater treatment (coagulant, phosphate removal), soil and lawn iron supplement / moss killer, animal feed and fertilizer iron source, pigment (iron oxide) manufacture, reducing agent. For industrial user only.

Uses advised against: All uses not specified in this section or in section 7.3.

Supplier's details

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2. HAZARDS IDENTIFICATION

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 Irrit. 2	Eye irritation, Category 2, H319

GHS label elements, including precautionary statements

GHS: Warning

Hazard statements

Acute Tox. 4: H302 – Harmful if swallowed.
Eye Irrit. 2: H319 – Causes serious eye irritation.

Precautionary statements

P264: Wash hands thoroughly after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves/eye protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER/doctor 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.
P501: Dispose of contents/container in accordance with local/national regulations.

Other hazards which do not result in classification

Iron overdose (from concentrated product) is a recognised paediatric poisoning hazard – keep out of reach of children. Not classified as PBT or vPvB.

3. COMPOSITION / INFORMATION ON INGREDIENTS

Substances

Chemical description: FERROUS SULPHATE HEPTA HYDRATE

In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 7782-63-0	FERROUS SULPHATE HEPTA HYDRATE — Acute Tox. 4: H302; Eye Irrit. 2: H319 – Warning	≥ 98% (technical/industrial grade; grade-specific assay available on request)

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

Mixtures

Non-applicable

4. FIRST AID MEASURES

Description of necessary first-aid measures

Request medical assistance immediately, showing the SDS of this product.

By inhalation

Remove the person affected from the area of exposure to fresh air and keep at rest. If dust has been inhaled and irritation or breathing difficulty persists, seek medical attention.

By skin contact

Remove contaminated clothing and footwear. Wash affected skin thoroughly with plenty of water and soap. If irritation develops or persists, seek medical attention.

By eye contact

Rinse eyes thoroughly with lukewarm water for at least 15 minutes, holding eyelids open. Remove contact lenses if present and easy to do. Seek medical attention if irritation persists.

By ingestion/aspiration

Rinse mouth with water. Do NOT induce vomiting. If conscious, give plenty of water to drink. Seek medical attention immediately, especially if large quantities were ingested.

Most important symptoms/effects, acute and delayed

Acute and delayed effects are indicated in sections 2 and 11.

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

Not relevant – treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

Suitable: Water spray, foam, dry chemical powder, carbon dioxide – product itself is non-combustible.
Unsuitable: None known.

Specific hazards arising from the chemical

Non-combustible. On strong heating, loses water of crystallization and decomposes, releasing sulfur oxide fumes.

Special protective actions for fire-fighters

Wear self-contained breathing apparatus and protective clothing in a significant fire, due to possible SOx fume evolution.

Additional provisions

If safe to do so, remove exposed containers from the fire area. Use water spray to cool fire-exposed containers/structures. Avoid generating and inhaling dust.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Avoid raising and inhaling dust. Use personal protective equipment as described in Section 8. Evacuate the area and keep unprotected persons away.

For emergency responders

Wear appropriate protective equipment as described in Section 8. Ensure adequate ventilation.

Environmental precautions

Prevent large quantities from entering drains or watercourses – may cause discoloration and is toxic to aquatic life at elevated concentrations.

Methods and materials for containment and cleaning up

Sweep up or vacuum spilled material (avoid generating dust) and place in a suitable closed, labelled container for recovery or disposal. Wash the spill area with water after solid material has been removed.

Reference to other sections

See sections 8 and 13.

7. HANDLING AND STORAGE

Precautions for safe handling

A. General precautions for safe use

Avoid generating and breathing dust. Avoid contact with skin and eyes. Keep away from incompatible materials (see section 10).

B. Technical recommendations for the prevention of fires and explosions

Product is non-combustible; keep away from strong oxidisers.

C. Technical recommendations on general occupational hygiene

Do not eat, drink or smoke during handling. Wash hands and exposed skin thoroughly after handling and before breaks/meals.

D. Technical recommendations to prevent environmental risks

Avoid release to the environment. Follow the protective measures given in Section 8. For bulk storage/handling, consult Suraj Chemicals.

Conditions for safe storage, including any incompatibilities

A. Specific storage requirements

Minimum Temp.	Ambient (no minimum requirement)
Maximum Temp.	30°C
Maximum time	12 Months in original, unopened packaging

B. General conditions for storage

Store in a cool, dry, well-ventilated place in tightly closed containers. Product oxidises (yellows/browns) on prolonged exposure to moist air, forming ferric compounds.

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.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

No specific occupational exposure limit has been established for this substance under Indian/OSHA/ACGIH lists. Apply the general dust exposure limit for particulates not otherwise classified/regulated (PNOC/PNOR): 10 mg/m³ (inhalable), 3-5 mg/m³ (respirable), TWA 8h, as a good-practice guideline.

Appropriate engineering controls

Use local exhaust ventilation or general dilution ventilation to keep airborne concentrations below occupational exposure limits. Consult the manufacturer's information leaflet for storage, use, cleaning and maintenance of PPE.

B. Respiratory protection

Not normally required under good ventilation. If dust levels exceed exposure limits, use a filtering half-mask respirator (type P1/P2).

C. Specific protection for the hands

Chemical-resistant gloves (nitrile or PVC).

D. Eye and face protection

Safety glasses with side shields or chemical splash goggles.

E. Bodily protection

Standard work clothing; dust-resistant overalls for prolonged handling.

F. Additional emergency measures

Emergency eyewash station and safety shower should be available in the immediate work area (ANSI Z358-1 / ISO 3864 or equivalent).

Environmental exposure controls

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

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	
Physical state at 20°C	Solid (crystalline)
Appearance	Crystals or crystalline granules
Color	Blue-green
Odor	Odorless
Odour threshold	Not established
Melting point/freezing point	64°C (loses water of crystallization)
Boiling point at atmospheric pressure	Not relevant *
Density / Relative density at 20°C	1.90 g/cm³
Bulk density	900 – 1100 kg/m³ (typical)
Solubility in water at 20°C	480 g/L
pH (5% aqueous solution)	3.0 – 4.0 (acidic)
Vapour pressure at 20°C	Not relevant *
Partition coefficient n-octanol/water	Not relevant (inorganic salt)
Decomposition temperature	~300°C (anhydrous salt decomposes to iron oxides/SOx)
Flammability	
Flash Point	Non-applicable (non-combustible solid)
Flammability (solid, gas)	Not classified as flammable
Autoignition temperature	Not relevant *
Lower / Upper flammability limit	Not relevant *
Particle Characteristics	
Median particle size	Available on request (grade/mesh-size dependent)

** Not relevant due to the nature of the product, not providing information on the properties of its hazards.*

Other information

Explosive properties	Not explosive
Oxidising properties	Not oxidising
Corrosive to metals	Not relevant *
Heat of combustion	Not relevant *
Surface tension at 20°C	Not relevant *
Refraction index	Not relevant *

10. STABILITY AND REACTIVITY

Reactivity

Mild reducing agent (Fe2+). Oxidises slowly in air/moisture to ferric (Fe3+) compounds. Reacts with strong oxidising agents.

Chemical stability

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

Possibility of hazardous reactions

Under the specified conditions, hazardous reactions that lead to excessive temperatures or pressure are not expected.

Conditions to avoid

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Not applicable	Not applicable	Avoid excessive heat	Not applicable	Avoid contact with moisture (may cake/hydrolyse)

Incompatible materials

Incompatible with	Reason/Effect
Strong oxidising agents	Exothermic reaction
Alkalis	Precipitates iron hydroxide

Hazardous decomposition products

No hazardous decomposition products under normal conditions of storage and use.

11. TOXICOLOGICAL INFORMATION

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 (H302). Iron salts are acutely toxic in overdose, particularly to children – may cause gastrointestinal corrosion, vomiting, and in severe overdose, systemic iron toxicity.

B. Inhalation (acute effect)

Dust may cause irritation of the nose and respiratory tract.

C. Contact with skin and eyes (acute effect)

Causes serious eye irritation (H319). May cause mild 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. IARC: Not listed.

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, except as noted in Section 2.

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

Classification criteria are not met based on available data.

H. Aspiration hazard

Classification criteria are not met based on available data (not a liquid hydrocarbon).

Product-specific toxicological information

Identification	Acute Toxicity	Genus
FERROUS SULPHATE HEPTA HYDRATE CAS: 7782-63-0	LD50 oral: 1500 mg/kg	Rat
	LD50 dermal: >2000 mg/kg	Rabbit
	LC50 inhalation: Not established	–

12. ECOLOGICAL INFORMATION

Moderately toxic to aquatic organisms at elevated concentrations; iron precipitation (hydroxide floc) can physically impact aquatic habitats.

Toxicity

Identification	Acute Toxicity	Species	Genus
Ferrous sulphate CAS: 7782-63-0	LC50: 25 – 68 mg/L (96h, as Fe)	Fish (various species)	Fish
	EC50: >10 mg/L (48h)	Daphnia magna	Crustacean

Persistence and degradability

Not readily biodegradable in the organic sense (inorganic substance); not applicable/not relevant.

Bioaccumulative potential

Not expected to bioaccumulate (low log Pow / inorganic ionic species).

Mobility in soil

Koc	Henry	Dry Soil	Moist Soil
Not relevant	Not relevant	Soluble in water – may leach in soil	Soluble in water – may leach in soil

Results of PBT and vPvB assessment

Non-applicable – this substance is not organic and does not meet PBT/vPvB screening criteria (inorganic salt/mineral).

Other adverse effects

Not described

13. DISPOSAL CONSIDERATIONS

Disposal methods

Small quantities may be dissolved in large volumes of water, pH-adjusted, and disposed of via a permitted wastewater treatment facility, subject to local discharge consent. Larger quantities/residues should be collected and disposed of via a licensed waste contractor.

Do not discharge to drains, soil or surface water. Dispose of via a licensed hazardous/industrial waste contractor in accordance with the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016 (India) and other applicable national/local regulations. Empty containers may retain product residue – handle empty containers with the same precautions as full ones.

14. TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023)

14.1 UN number	Not assigned
14.2 UN proper shipping name	Non-Dangerous Goods for transport under ADR/RID, IMDG and IATA/ICAO
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazard	No
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 41-22)

14.1 UN number	Not assigned
14.2 UN proper shipping name	Non-Dangerous Goods for transport under ADR/RID, IMDG and IATA/ICAO
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Marine pollutant	No
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 air (IATA/ICAO 2024)

14.1 UN number	Not assigned
14.2 UN proper shipping name	Non-Dangerous Goods for transport under ADR/RID, IMDG and IATA/ICAO
14.3 Transport hazard class(es)	Not applicable
14.4 Packing group	Not applicable
14.5 Environmental hazard	No
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

15. REGULATORY INFORMATION

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)
The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
Public Liability Insurance Act, 1991
Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016

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

Not applicable – no hazard statements apply to this product.

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); European Chemicals Agency (ECHA) classification and labelling inventory; publicly available chemical safety literature for this substance.

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 | COD: Chemical Oxygen Demand | BOD5: 5-day biochemical oxygen demand | BCF: Bioconcentration factor | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

Disclaimer: 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.

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