

## 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND OF THE COMPANY / UNDERTAKING

**Product identifier:**

**Product name:** Ferric sulphate solution  
**Synonyms, Trade Names:** Iron (III) sulphate solution  
**REACH Registration number:** 01-2119513202-59  
**REACH Registration notes:** Registered as the pure (dry) substance

**Relevant identified uses of the substance or mixture and uses advised against:**

**Identified uses:** Treatment of drinking water, has received approval by the European Committee for Standardisation. Laboratory agent Use of selected iron salts in land remediation applications  
 Treatment of wastewater. Use of iron salts in biogas production Use of iron salts as precursors to pigments and other iron compounds Use in adhesives and sealants Catalyst.

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## 2. HAZARDS IDENTIFICATION

**Classification of the substance or mixture**

**Classification (EC 1272/2008):** Physical and Chemical Hazards Met. Corr. 1 - H290  
 Human health Acute Tox. 4 - H302; Eye Irrit. 2 - H319; STOT SE 3 - H335  
 Environment not classified.

**Classification (1999/45/EEC):** Xn; R22. Xi; R36/37.

The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

**Label elements:**

**Contains:** Ferric sulphate

**Label In Accordance With (EC) No. 1272/2008**



**Signal Word:** Warning

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**Hazard Statements:**

H290 May be corrosive to metals.  
H302 Harmful if swallowed.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.

**Supplementary Precautionary Statements:** P270 Do not eat, drink or smoke when using this product.

P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P261 Avoid breathing vapour/spray.  
P264 Wash contaminated skin thoroughly after handling.  
P304+340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P312 Call a POISON CENTER or doctor/physician if you feel unwell.  
P313 Get medical advice/attention.  
P390 Absorb spillage to prevent material damage.  
P403+233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.  
P406 Store in corrosive resistant/... container with a resistant inner liner.

**Other hazards:**

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

#### Mixtures

<b>Ferric sulphate</b>	40-60%		
<b>CAS-No.:</b>	10028-22-5	<b>EC No.:</b>	233-072-9

Classification (67/548/EEC)	Classification (EC 1272/2008)
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Acute Tox. 4 - H302	Xn;R22.
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Eye Irrit. 2 - H319	Xi;R36/37.
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STOT SE 3 - H335	
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The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

**REACH Registration number:** 01-2119513202-59

**REACH Registration notes:** Registered as the pure (dry) substance

### 4. FIRST AID MEASURES

#### Description of first aid measures:

**Inhalation:** Move the exposed person to fresh air at once. Get medical attention. Check for lung congestion if NOx present.

**Ingestion:** DO NOT induce vomiting. Get medical attention immediately. Immediately rinse mouth and drink plenty of water (200-300 ml). If confined to the mouth, rinse mouth thoroughly and ensure water is not swallowed. If swallowed, drink plenty of water.

[cont...]

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**Skin contact:** Remove contaminated clothes and rinse skin thoroughly with water. Get medical attention if any discomfort continues.

**Eye contact:** Promptly wash eyes with plenty of water while lifting the eye lids. Obtain medical attention and bring these instructions.

**Most important symptoms and effects, both acute and delayed:**

**Indication of any immediate medical attention and special treatment needed:**

### 5. FIRE-FIGHTING MEASURES

**Extinguishing media:** The product is non-combustible. However NO<sub>x</sub> will support combustion. Use fire-extinguishing media appropriate for surrounding materials. Dry chemicals. Water spray. Carbon dioxide (CO<sub>2</sub>).

**Special hazards arising from the substance or mixture:**

**Hazardous combustion products:** Oxides of: Sulphur. Residual dissolved NO<sub>x</sub>

**Advice for firefighters**

**Protective equipment for fire-fighters:** Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures:** Wear protective clothing as described in Section 8 of this safety data sheet.

**Environmental precautions:** Spillages or uncontrolled discharges into watercourses must be IMMEDIATELY alerted to the Environmental Agency or other appropriate regulatory body.

**Methods and material for containment and cleaning up:** Small Spillages: Flush away small spillages with plenty of water. Large Spillages: Contain, neutralise with lime or soda ash, and dispose of in accordance with local regulations.

**Reference to other sections**

### 7. HANDLING AND STORAGE

**Precautions for safe handling:** Wear appropriate protective clothing. Avoid contact with skin and eyes. Avoid forming spray/aerosol mists. If brown NO<sub>x</sub> gasses observed, do not breathe fumes. Do not wear contact lenses when handling this material.

**Conditions for safe storage, including any incompatibilities:** Avoid contact with oxidising agents. Ensure adequate ventilation to avoid build-up of NO<sub>x</sub> gasses. Storage tanks and day tanks must be vented to the outside atmosphere, using suitable piping. Store separated from: Store in vessels suitable for substances of low pH. Store away from: Alkalis. Avoid contact with metals (except 316 and 340 stainless steel).

**Specific end use(s):**

[cont...]

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION****Control parameters:**

Name	STD	TWA - 8 Hrs	STEL - 15 Min	Notes
Ferric sulphate		1 mg/m3	2 mg/m3	

**Ingredient Comments:** Nitrogen oxides STEL (15min) 5ppm (nitrogen dioxide - OSHA limit). Immediately dangerous for life or health 20ppm (nitrogen dioxide - NIOSH); 8hr TWA 25ppm (nitric oxide - OSHA limit), Immediately dangerous for life or health 100ppm (nitric oxide - NIOSH)

**Exposure controls:**

**Respiratory equipment:** If mists are formed, a respirator must be worn. If brown NOx gasses are observed in a confined space, use self - contained breathing apparatus. If outside, move to upwind position.

**Hand protection:** PVC or rubber gloves are recommended.

**Eye protection:** Goggles/face shield are recommended.

**Other Protection:** Plastic apron, sleeves, boots - if handling large quantities, full body suit.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Information on basic physical and chemical properties:**

**Appearance:** Liquid

**Colour:** Brown.

**Solubility:** (Of nitric oxide) 46ml/l at 20°C (62g/ton of water)

**Initial boiling point and boiling range (°C):** ~120°C

**Melting point (°C):** < -20°C

**Relative density:** 1.45 - 1.65 20

**Vapour density (air=1):** 1.04 (nitric oxide) & 1.58 (nitrogen dioxide)

**pH-Value, Conc. Solution:** 0.5 - 1.0

**Viscosity:** 45 cP 20°C  
90 cps at 5°C

**Other information:**

**10. STABILITY AND REACTIVITY**

**Reactivity:** N.B. Product produced by oxidation of ferrous sulphate with nitric acid. Some small quantities of residual nitrogen oxides may be given off (clearly visible reddish brown, and acrid odour) O: Oxidising, T+: very toxic, C: corrosive. Not believed to be carcinogenic or mutagenic.

**Chemical stability:** Do not store near sources of heat If diluted to <~1% in water, ferric hydroxide is formed and flocculates out. In the event of release to the aquatic environment, this process counteracts the potential hazards of the substance, and does not add significantly to the ubiquitous iron in the environment.

**Possibility of hazardous reactions:**

**Conditions to avoid:** Dilution to < ~ 1% results in ferric hydroxide formation In contact with metals generates hydrogen gas, which together with air can form explosive mixtures.

**Incompatible materials:****Materials To Avoid:** Powdered metal. Solid metals (except stainless steel).**Hazardous decomposition products:****11. TOXICOLOGICAL INFORMATION****Information on toxicological effects:**

Toxic Dose 1 - LD 50

2100 mg/kg (oral rat)

**Acute toxicity:**

Acute Toxicity (Dermal LD50)

2000 mg/kg Rabbit

**General information:**

Product may give off small amounts of nitrogen oxides: low levels in the air can irritate the eyes, nose throat and lungs. Coughing, nausea, shortness of breath and tiredness may result. Higher levels of NOx can cause rapid burning, spasms, swelling of tissue in the respiratory tract, build-up of fluids in the lung, and even death.

**Inhalation:**

Dust in high concentrations may irritate the respiratory system.

**Ingestion:**

May cause chemical burns in mouth, oesophagus and stomach. May cause liver and/or renal damage. Diarrhoea. Fibrosis of the pancreas. Irregular heartbeat, vomiting blood. Possibly fatal in large quantities.

**Skin contact:**

Irritating to skin. Prolonged and frequent contact may cause redness and irritation. Can cause burns by repeated / prolonged exposure

**Eye contact:**

Irritating to eyes. Risk of corneal damage.

**12. ECOLOGICAL INFORMATION****Ecotoxicity:**

No data on possible environmental effects have been found. Due to its acidic nature, spillage of ferric sulphate solution may cause localised damage to plants. If diluted and neutralised no lasting effects will occur.

**Toxicity:**

Acute Toxicity - Fish

LC50 96 hours &gt; 28 mg/l Onchorhynchus mykiss (Rainbow trout)

Acute Toxicity - Aquatic Invertebrates

EC50 48 hours 11 mg/l Freshwater invertebrates

Chronic Toxicity - Aquatic Invertebrates

EC50 21 days 4.5 mg/l Freshwater invertebrates

**Persistence and degradability:****Bioaccumulative potential:****Mobility in soil:****Results of PBT and vPvB assessment:****Other adverse effects:**

**13. DISPOSAL CONSIDERATIONS**

**Waste treatment methods:** Small amounts can be neutralised with lime or caustic soda, and washed away with copious amounts of water. Small amounts may be flushed with water to sewer. Larger volumes must be sent to approved plant for destruction. Dispose of waste and residues in accordance with local authority requirements. Do not dispose directly into rivers or drains.

**14. TRANSPORT INFORMATION**

**UN number:** UN No. (ADR/RID/ADN) 1760  
UN No. (IMDG) 1760  
UN No. (ICAO) 1760

**UN proper shipping name:** Proper Shipping Name CORROSIVE LIQUID, N.O.S. (Ferric sulphate solution).  
Proper Shipping Name CORROSIVE LIQUID, N.O.S.

**Transport hazard class(es):**

**ADR/RID/ADN Class:** 8  
**ADR/RID/ADN Class:** Class 8: Corrosive substances.  
**ADR Label No.:** 8  
**IMDG Class:** 8  
**ICAO Class/Division:** 8

**Transport Labels:****Packing group:**

**ADR/RID/ADN Packing group:** III  
**IMDG Packing group:** III  
**ICAO Packing group:** III

**Environmental hazards:****Special precautions for user:**

**EMS:** F-A, S-B  
**Emergency Action Code:** 2X  
**Hazard No. (ADR):** 80  
**Hazard No. (ADR):** 80 Corrosive or slightly corrosive substance.  
**Tunnel Restriction Code:** (E)

**Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:**

**15. REGULATORY INFORMATION****Safety, health and environmental regulations/legislation specific for the substance or mixture:**

**UK Regulatory References:** The Control of Substances Hazardous to Health Regulations 2002 (S.I 2002 No. 2677) with amendments.

**Guidance Notes:** Workplace Exposure Limits EH40.

**EU Legislation:** Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

**Chemical Safety Assessment:** A chemical safety assessment has been carried out.

**Note:** The regulatory information given above only indicates the principal regulations specifically Applicable to the product described in the safety data sheet. The user's attention is drawn to the possible existence of additional provisions which complete these regulations. Refer to all applicable national, international and local regulations or provisions.

**16. OTHER INFORMATION**

**General information:** Ferric sulphate solution is used as a chemical for the treatment of drinking water, as approved by the European Committee for Standardisation under EN 890:2004. The transport and regulatory information given are in accordance with EN 890:2004, with R22 added. However, that document indicates ferric sulphate falls under packing group 1, as a "Substance presenting high danger". ICL believes that this classification is not justified for ferric sulphate, which only represents a low danger. 11.0% and 12.5% grades are assigned to Packing Group III, but the 8.5% grade is assigned to Packing Group II, because of the added sulphuric acid content. Some sedimentation can occur in this product. Even after filtering, slow sedimentation will occur. To avoid problems caused by this sedimentation, storage tanks should be cleaned every 1 to 2 years.

**Risk Phrases In Full:** R22 Harmful if swallowed.  
R36/37 Irritating to eyes and respiratory system.

**Hazard Statements In Full:** H290 May be corrosive to metals.  
H302 Harmful if swallowed.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.

**Legal disclaimer:** The information contained in this SDS does not constitute a risk assessment, and should not replace the user's own assessment of risks as required by other health and safety legislation. This advice is given by Nexchem Ltd who accept no legal liability for it except otherwise provided by law. The information contained herein is based on the present state of our knowledge and is intended to describe our products from the point of view of safety requirements. It should not therefore be construed as guaranteeing specific properties.