SAFETY DATA SHEET

Ferrous Sulphate Heptahydrate

Date: 04/08/2015
Revision nr:
513

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

1.1 Product Identifier:

Product name: Soluble Iron
Product Number: GRE/FER/SUL/20KG

1.2 Relevant identified uses: Horticultural fertiliser

1.3 Details of the Supplier of SDS: **GreenBest Ltd**, Unit 2, The Marsh, Henstridge, Somerset BA8 0TF
Tel: +44 (0) 1963 364788 Fax: +44 (0) 1963 364789
info@greenbest.co.uk

1.4 Emergency Telephone Number: Tel: +44 (0) 1963 364788 - Normal Hours are 08:00-17:00 Monday-Friday
Tel: +44 (0) 7801 644405 – Out of normal hours only

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Hazard Classification: Dangerous Substances according to Directive (67548/EEC) or Directive 1999/45/EC			
Name	**Hazard Class**	**Hazard Category**	**Risk Phrase**
Ferrous Sulphate	Acute Toxicity Irritation/ Corrosion	Xn: Harmful Xi: Irritant	R22: Harmfull if swallowed R36/38: Irritation to eyes and skin
Hazard Classification: CLP regulations (EC)12721/2008			
Name	**Hazard Class**	**Hazard Category**	**Hazard Statement (code)**
Ferrous Sulphate	Acute Toxicity Skin Irritation Serious Damage/ Eye Irritation	Acute Tox. 4 Skin Irrit. 2 Eye Irrit. 2	H302: Harmfull if swallowed H315: Causes skin irritation H319: Causes serious eye irritaton

2.2 Label Elements

Pictogram: GHS07: exclamation mark
Signal Word: Warning
Hazard-determining components of labelling: Ferrous Sulphate Heptahydrate
Hazard Statements: H302: Harmful if swallowed.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
Precautionary Statements: P273: Avoid release to the environment
P280:Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312: IF SWALLOWED: Call a POISON CENTRE 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.
P313: Get medical advice/attention

2.3 Other Hazards N/A

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS.

Substance	CAS Number	EC Number	Classification according to 67/548/EEC	Classification according to Regulation (EC) No 1278/2008 (CLP).	REACH Registration Number
Ferrous Sulphate	7782-63-0	231-753-5	Xn; R22, Xi; 36/38	H302, H315, H319	01-2119513203-57-XXXX

SECTION 4. FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: Remove from exposure. Rinse mouth and nose with water. In severe cases, or if recovery is not rapid or complete seek medical attention.

Skin Contact: Rinse with plenty of water. Remove contaminated clothing and wash before reuse. If irritation persists seek medical attention.

Eye Contact: Irrigate thoroughly with water for at least 10 minutes. Obtain medical attention.

Ingestion: Call a doctor/physician immediately. P331 – Do not induce vomiting. P330 – Rinse mouth with water, drink 1 or 2 glasses of water or milk. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

General Information: Can be acutely toxic but main symptoms will be irritation to the eye

4.3 Indication of any immediate medical attention and special treatment needed

General Information: Seek medical attention if symptoms persist

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing Media: Use CO_2 or water spray. Do not smother with foam or sand.

5.2 Special Hazards Arising from the Substance or Mixture: Sulphur Dioxide (SO_2)

5.3 Advice for firefighters: In the event of a fire, wear self contained breathing apparatus. Fire-fighters must wear fire resistant personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Refer to protective measures listed in section 7 “Handling and Storage”. Wear protective suit and boots, if dust, aerosols or mist are formed, use half mask with combination filter B/P2.

6.2 Environmental precautions: Cover the drains to prevent product from entering the environment. If the product contaminates rivers and lakes or drains inform respective authorities. Restrict the spread of the spillage by using inert absorbent material (sand, gravel) solutions only.

6.3 Methods and material for containment and cleaning up: Contain and sweep up spillages. Place unusable material in labelled containers or plastic bags for disposal. Wet residues are slippery; wash floor to remove traces.

SECTION 7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling: The work place and work methods shall be organised in such a way that direct contact with the product is prevented or minimised. Wear gloves in a suitable material such as PVC, Neoprene or Natural rubber. Please observe the instructions regarding permeability and breakthrough time, which are provided by the supplier of the gloves. Also consider the specific local conditions under which the product is used, such as the danger of cuts, abrasion and contact time. Tightly fitting safety goggles must be worn.

7.2 Conditions for safe storage, including any incompatibilities	Suitable storage containers include– Plastic (PE, PP, PVC), Fiberglass-reinforced polyester, Epoxy-coated concrete, Titanium, Acid-proof or rubber-coated steel. Materials to avoid include – Non acid-proof metals (such as aluminimum, copper and iron), Bases, Unalloyed steel, Glavanised surfaces. Keep away from incompatible products. Avoid freezing. Protect from heat and direct sunlight. Store under dry conditions (temperature <30°C).
7.3 Specific end uses	No further specific end uses other than those named in section 1.2.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters

DNELs

Worker:
Acute systemic effects, dermal: ($FeSO_4*7H_2O$) 2.8mg/kg/d
Acute systemic effects, inhalitive: ($FeSO_4*7H_2O$) 9.9 mg/m^3
Systemic long-term effects, dermal: ($FeSO_4*7H_2O$) 2.8mg/kg/d
Systemic long-term effects, inhalitive: ($FeSO_4*7H_2O$) 9.9 mg/m^3

Consumer:
Acute systemic effects, oral: ($FeSO_4*7H_2O$) 1.4 mg/kg/d
Acute systemic effects, dermal: ($FeSO_4*7H_2O$) 1.4 mg/kg/d
Acute systemic effects, inhalitive: ($FeSO_4*7H_2O$) 2.5 gm/m^3
Systemic long-term effects, oral: ($FeSO_4*7H_2O$) 1.4 mg/kg/d
Systemic long-term effects, dermal: ($FeSO_4*7H_2O$) 1.4 mg/kg/d
Systemic long-term effects, inhalitive: ($FeSO_4*7H_2O$) 2.5 gm/m^3

PNECs The PNECs given in this section were derived based on the concentration which would cause a 10% increase above typical natural background levels of iron in soil and sediment. Thus the respective PNEC is equal to 110% of the typical natural background level of iron.

Water: Iron is an essential trace element for fish, aquatic invertebrates and plants. A direct toxicity could not be demonstrated in tests. Therefore no PNEC was derived.

Sewage treatment plants (STP): PNEC STP Fe: 500mg/l: $FeSO_4*7H_2O$: 2483 mg/l

Sediment: PNEC Sediment (freshwater): Fe: 49.5 g/kg; $FeSO_4*7H_2O$: 246 g/kg dry weight
PNEC Sediment (marine water): Fe: 49.5 g/kg; $FeSO_4*7H_2O$246 g/kg dry weight

Soil: PNEC Soil: Fe: 55 g/kg; $FeSO_4*7H_2O$: 276 g/kg dry weight

Oral Food Chain: Iron is an essential trace element fo fish, aquatic invertebrates and plants. A direct toxicity could not be demonstrated in tests. Therefore no PNEC was derived.

8.2 Exposure Controls

Protective Equipment: Dust mask with a minimum protection factor of 10 with HSE type approval.
Nitrile gloves may be worn for personal hygiene purposes.
Wear coverall and rubber boots when dealing with bulk spillages.
Face shield (BS2092 G1) if handling dust.

Appropriate Engineering Controls: Ensure adequate ventilation in the work area

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Crystalline
Colour:	Greenish
Odour:	Odourless
Odour threshold:	Not determined
pH value (400g/l) at 20 °C:	3.6
Initial melting point (°C):	64
Initial boiling point and boiling range (°C):	N/A
Flash point (°C):	N/A
Flammability (solid):	Product is non-flammable
Ignition temperature (°C):	N/A
Decomposition temperature (°C):	N/A
Self-flammability (°C):	Product is not self-igniting

Danger ofexplosion (^{o}C):	Product is not explosive
Vapour Pressure:	N/A
Density:	1.89 g/cm^3
Apparent Density at 20 ^{o}C:	0.8-0.9 kg/l
Vapour density:	N/A
Evaportation rate:	N/A
Solubility in/miscibility with water at 20^{o}C:	365 g/L
Partition coefficient (n-octanol/water):	N/A
Viscosity dynamic at 20^{o}C:	3 m Pas (solution containing 365 g/l)

SECTION 10. STABILITY AND REACTIVITY

10.1 Reactivity:	Product has long-term stability under normal conditions.
10.2 Chemical stability	No decomposition if used and stored under normal conditions.
10.3 Possibly hazardous reactions	Avoid mixing with strong oxidising agents, strong acids, strong bases, hypochlorites, aldehydes, allyl chloride.
10.4 Conditions to avoid	Mildly corrosive if left in contact with ferrous metals.
10.5 Incompatible materials	Oxidising agents (see also Section 7)
10.6 Hazardous decomposition products	No known hazardous decomposition products

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Data from the Ket studies for iron sulphates and iron cholrides:
Oral LD50 132-881 mg FE/kg (rat) (OECD 423)
Dermal LD50 >400 mg Fe/kg (rat) (OECD 402)
Inhalative LC50 no relevant data available

Data for ferrous sulphate heptahydrate:
Oral LD50 132-8657-4390 mg FE/kg (rat) (derived)
LD50 >2000 mg/kg (rat) (OECD 423)
Dermal LD50 >1992 mg Fe/kg (rat) (derived)
Inhalative LC50 no relevant data available

Primary Irritant Effect

On the skin:	OECD 404: Irritant for skin and mucouse membranes
On the eye:	OECD 405: Irritant effect.
Sensitisation:	OECD 429 (LLNA-test): No sensitising effects.

Subacute to chronic toxicity:

Data for the Key Studies for iron sulphates and iron chlorides:
Oral NOAEL 57-65 mg Fe/kg/d (rat, 90 days) (not according to OECD)
Derma NOAEL no relevant data available
Inhalative NOAEC no relevant data available

Data for ferrous sulphate heptahydrate:
Oral NOAEL 284-324 mg/kg/d (rat, 90 days) (derived)
NOAEL 100 mg/kg/d (rat, 49 days)
Derma NOAEL no relevant data available
Inhalative NOAEC no relevant data available

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):	There are no indications of CMR effects.
Specific target organ toxicity (STOT):	No specific target organ toxicity according to the criteria defined in Regulation (EC) No. 1272/2008.
Aspiration hazard:	No data, not an aspiration hazard.

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity	Data is experimentally not accessible. Under standard test conditions, the ferrous ion, Fe2+, is unstable and is oxidised to the ferric, Fe3+, ion. Ferric iron salts have a high rate of converstion to insoluble ferric hydroxide, in consequence, Fe2+ is to a great extent removed from the test system. Furthermore, iron plays an important role in biological processes, with iron homeostasis being under strict control. In conclusion, iron is not considered to be toxic to the aquatic environment under normal conditions.
12.2 Persistence and degradability	Not relevant for inorganic substances.
12.3 Bioaccumulative potential	Iron is a bioessential trace element for organisms and plays an important role in biological processes. The uptake of iron is strictly controlled by homeostatic processes. In conclusion, bioaccumulation poses no concern.
12.4 Mobility in soil	The susbstance is immobile in soil. AOX-indication: <2mg/kg
12.5 Results of PBT and vPvB assesment	This product is an inorganic substance and does not fulfil the criteria for PBZ and vPvB according to Annex XIII of REACH.
12.6 Other adverse effects	No further relevant information available.

SECTION 13. DISPOSAL CONSIDERATION

13.1 Waste treatment methods European waste catalogue	Waste code number according to origin of waste. This product is classified as hazardous waste and as such is covered by local waste legislation. P273 – Avoid release to the environment. Do not discharge directly into watercourse or any other controlled watercourse. P501-Waste disposal according to EC-regulations 2006/12/EC and 91/689/EEC in the corresponding versions, covering waste and dangerous waste.
13.2 Uncleaned packagings	Disposal according to official regulations.

SECTION 14. TRANSPORT INFORMATION

General Information	This product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, ADR/RID)
14.1 UN Number	N/A
14.2 UN Proper Shipping Name	N/A
14.3 Transport hazard class(es)	No transport warning sign required
14.4 Packing group	N/A
14.5 Environmental hazards	Not an environmentally hazardous substance.
14.6 Special precaution for user	N/A
14.7 Transport in bulk according to Annex II MARPOL73/78 and the IBC code.	Listed

SECTION 15. REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legistlation specific for the substance or mixture	EU legislation Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures (as amended). 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) (as amended).
15.2 Chemical safety Assesment	A Chemical Safety Assesment has been carried out by the supplier.

SECTION 16. OTHER INFORMATION

Key literature references and sources for data	European Chemicals Agency http://echa.europa.eu/
R-Phrases:	R22 – Harmfull if swallowed R36/38 – Irritating to eyes and skin
S-Phrases:	S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S26/37/39 – Wear suitable protective clothing, gloves and eye/face protection. S46 – if swallowed, seek medical advice immediately and show this document. S60- this material and its container must be disposed of as hazardous waste.
Hazard Statements:	H302: Harmful if swallowed. H315: Causes skin irritation. H319: Causes serious eye irritation.
Precautionary Statements:	P273: Avoid release to the environment 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. P302 +P352: IF ON SKIN: Wash with plenty of soap and water. P332 +P313: If skin irritation occurs: Get medical advice/attention. P301+P312: IF SWALLOWED: Call a POISON CENTRE or doctor/physician if you feel unwell. P313: Get medical advice/attention P321: Specific treatment (see label). P330: Rinse Mouth P331: Do NOT induce vomiting P501: Dispose of contents/container in accordance with local/regional/national/international regulations.
Further information:	The information contained in this leaflet is given in good faith. It is accurate to the best of our knowledge and belief and represents the most up-to-date information at the time of publication. Providing our products are handled and used in accordance with the label instructions, they should offer no hazard to health or safety.