



Fusion

Soluble Fe

Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 1 of 8

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product Identifier Fusion Soluble Fe

1.2. Relevant identified uses of the substance or mixture and uses advised against
Relevant uses: Use as a professional use fertiliser.

1.3. Details of the supplier of the safety data sheet

Company: Indigrow Ltd, The Old Bakery, Hyde End Lane, Brimpton, Berkshire, RG7 4RH. UK.
Phone: +44 (0) 1189 710 995
Email: growth@indigrow.com

1.4. Emergency telephone number +44 (0) 7725 962 366

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

CLASSIFICATION according to Directive EC 1272/2008 Classification, Labelling and Packaging

Acute Tox. 4; H302: Harmful if swallowed.

Skin Irrit. 2; H315: Causes skin irritation

Eye irritant 2; H319: Causes serious eye irritation

CLASSIFICATION according to Directive 1999/45/EC and statutory instrument No.716 2009 Chemicals (Hazard Information and Packaging) regulation)

Xn, R22; Harmful, Harmful if swallowed
Xi; R36/38: Irritant; Irritating to eyes and skin.

Primary Hazard

Harmful if swallowed, causes serious eye irritation, causes skin irritation.

2.2. Label elements

Contains: Iron sulphate E.C. 231-753-5

Signal word: Warning



Hazard Statements: H302: Harmful if swallowed.
H315: Causes skin irritation
H319: Causes serious eye irritation

Precautionary Statements P280: Wear protective gloves/eye protection.
P301+P312: IF SWALLOWED: Call a POISON Center or doctor/physician if you feel unwell.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.
P362: Take off contaminated clothing and wash before reuse.

2.3. Other hazards

Mixture not classed as PBT or vPvB.

Fusion

Soluble Fe






Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 2 of 8

SECTION 3: Composition/Information on Ingredients

Hazardous components:

Chemical Name	CAS-No./EINECS-No.	Annex Index or REACH number	Symbol(s)	R-phrases	Concentrations [%]
Iron Sulphate	7720-78-7 / 231-753-5	Index number 026-003-00-7 REACH Number: 01-2119513203-57	According to 1272/2008: GHS07  According to 67/548/EEC:  Xi - IRRITANT  Xn - HARMFUL	According to 1272/2008: Acute tox. 4, H302 Skin irrit. 2, H315 Eye Irrit. 2, H319 According to 67/548/EEC: R22, R36/38	85 - 90
Citric Acid	77-92-9 / 201-069-1	REACH Number: 01-2119457026-42	According to 1272/2008: GHS07  According to 67/548/EEC:  Xi - IRRITANT	According to 1272/2008: Eye Irrit. 2, H319 According to 67/548/EEC: R36	< 5.0

The full hazard information for individual components if not displayed in section 2 or 3 are displayed in Section 16.

SECTION 4: First-Aid Measures

4.1. Description of first aid measures

By inhalation:	If symptoms arise remove from source of exposure to fresh air; seek medical attention if symptoms persist or develop.
By skin contact:	Drench immediately with water. Remove any contaminated clothing and launder before re-use. Seek medical attention if symptoms persist or develop.
By eye contact:	Rinse cautiously for several minutes, Remove contact lenses, if present and easy to do, rinse with clean water for 15 minutes. Seek medical attention if symptoms persist or develop.
By consumption:	Do not induce vomiting. Wash out mouth with water and give water to drink. Seek medical attention if symptoms persist or develop.

4.2. Most important symptoms and effects, both acute and delayed

Harmful if swallowed, causes serious eye damage.



Fusion

Soluble Fe

Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 3 of 8

4.3. Indication of any immediate medical attention and special treatment needed

Information not available.

SECTION 5: Fire-Fighting Measures

5.1. Extinguishing media

Use Foam, carbon dioxide, dry powder, sand. The mixture is not classified as flammable as such extinguishing media should also be chosen as appropriate for surrounding materials.

5.2. Special hazards arising from the substance or mixture

Possible irritant and corrosive fumes arising from combustion including oxides of nitrogen.

5.3. Advice for fire-fighters

Cool down containers/equipment exposed to heat with a water spray. Contain spread of extinguishing fluids (these fluids may be hazardous for the environment). Wear complete protective clothing and self-contained breathing apparatus.

SECTION 6: Accidental Release Measures

6.1. Personal precautions, protective equipment and emergency procedures

The following precautions are considered to be good practice when using any chemicals irrespective of their classification unless otherwise specified.

Use personal protective equipment: appropriate coveralls and gloves
eye/face protection

Avoid contact with skin and eyes

6.2. Environmental precautions

Do not allow to enter storm drains or water courses. If this product enters a water course or a sewer (including via contaminated soil & vegetation) in large quantities contact local water authority and inform the Environment Agency.

6.3. Methods and material for containment and cleaning up

Sweep avoiding dust into labelled waste container. Contact specialist waste disposal contractor.

6.4. Reference to other sections

See section 8 for personal protective equipment specification

SECTION 7: Handling and Storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Wash Hands thoroughly after handling

Do not eat, drink or smoke when using this product. Remove contaminated clothing and protective equipment before entering eating areas.

Avoid contact with metals, avoid the formation of mists in the atmosphere, work in a well-ventilated area.

Avoid any direct contact with the product, Do NOT handle without gloves. Do NOT handle if hands have any cuts or wounds.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool dry atmosphere, in original labelled containers. Refer to manufacturer for maximum safe stacking height. Keep away from heat sources, combustible materials.

Store away from incompatible materials – Strong acids, Strong oxidising substances, powdered metals, inorganic peroxides.



Fusion

Soluble Fe

Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 4 of 8

7.3. Specific end use(s)

No specific information available

SECTION 8: Exposure Controls/Personal Protection

8.1. Control parameters

Workplace exposure Limits as defined by UK HSE in document EH40/2005 where available:

Substance	CAS Number	Workplace Exposure Limit				Comments
		Long-term exposure limit (8-hr TWA reference period)		Short-term exposure limit (15 minute reference period)		
		ppm	mg.m ⁻³	ppm	mg.m ⁻³	
Iron salts (as Fe)	-	-	1.0	-	1.0	The Carc, Sen and Sk notations are not exhaustive. Notations have been applied to the substances identified in IOELV Directives*

*IOELV – Indicative Occupational Exposure Limit Values (IOLEV).

8.2. Exposure controls

The following precautions are considered to be good practice when using any chemicals irrespective of their classification unless otherwise specified.

Goggles: Eye Protection: goggles/face shield to BS EN166.
 Gloves: Acid-resistant protective gloves. Long protective gloves, which go over the sleeves.
 Skin and body protection: Impermeable suit (Hypalon, Tyvek, Saranex, PVC...).
 Impermeable boots.
 Wear suitable protective clothing, gloves and eye/face protection.

Personal protective equipment must be defined after risk assessment for the workstation. Protective equipment must be chosen according to current CEN standards and in cooperation with the supplier of protective equipment.

SECTION 9: Physical and Chemical Properties

9.1. Information on basic physical and chemical properties

Appearance: Green Solid
 Odour: Information not specified
 pH: Information not specified
 Melting point/freezing: Information not specified
 Flammability (solid, gas): Mixture not classified as Flammable
 Upper /lower flammability or explosive limits: Mixture not classified as Explosive
 Specific gravity: Information not specified
 Solubility(ies): Information not specified

9.2. Other information

No other relevant information available.



Fusion

Soluble Fe

Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 5 of 8

SECTION 10: Stability and Reactivity

10.1. Reactivity

May react with metals.

10.2. Chemical stability

Stable under normal conditions of use.

10.3. Possibility of hazardous reactions

Information not available.

10.4. Conditions to avoid

Extremes of temperature.

10.5. Incompatible materials

Powdered metals, metal containers

10.6. Hazardous decomposition products

Possible Irritant fumes.

SECTION 11: Toxicological Information

11.1. Information on toxicological effects

The mixture has not been assessed for toxicological effects. Full mixture classification is given in section 2. Individual component classifications are given in section 3 and 16.

Iron Sulphate
Acute toxicity:

The overall pattern of oral toxicity for iron salts is that they are harmful if swallowed. The human oral lethal dose is approximately 1000 mg/kg and 500-2000 mg/kg in rats. Toxic effects may, however, be produced by much lower doses especially when administered systemically. There is limited evidence that inhaled soluble iron salts are tolerated by rats plus limited evidence that inhaled soluble iron salts do not impair lung function and the dermal lethal dose would be greater than 2000 mg/kg. The dermal limit dose of Ferrous Chloride in rats is greater than 2,000 mg/kg (>881 mg Fe/kg) and thus should be used to compare against Ferrous Sulphate. This suggests little potential for systemic toxicity in humans after dermal contact.

Dose descriptor: Oral - LD50S 300-2000 mg/kg bw

Dermal: LD50S >2000 mg/kg bw

Inhalation: No data

Skin corrosion / irritation

Ferrous Sulphate is skin irritant based on (2:1 animals majority) in rabbit test and is an eye irritant. Read across from Ferrous Sulphate and Ferric Chloride, indicates that solutions have the same or a lower classification than the solid and that classification based on pH would be overly cautious. On this basis an irritant classification, Skin Irritation Cat 2. H315: Causes skin irritation should be applied to solutions based on rules for mixtures. This classification therefore applies for solutions of concentration > 10%. Ferrous Sulphate should not be seen as corrosive just as an irritant.

Eye damage / irritation:

Results are available for a GLP-compliant guideline study (Johnson, 2003), which showed that a 25% solution of Ferrous Sulphate Heptahydrate caused no more than mild redness and chemosis after instillation into the rabbit eye. The predicted classification based on reading across of several iron salts would be a classification between no classification and causes serious eye damage however due to the lack of test data and low pH (<2) a precautionary approach should be taken with classification as Eye Damage2.



Fusion

Soluble Fe

Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 6 of 8

Respiratory / Skin sensitisation:	Ferrous Sulphate Heptahydrate has been tested in a guideline, GLP, Local Lymph Node Assay (Stitzinger, 2010: reliability 1). In this test Ferrous Sulphate gave a clear negative result and is therefore not considered a skin sensitiser. Results of a reliable LLNA test were clearly negative for Ferrous Sulphate Heptahydrate. There are a few case studies in which human subjects showed signs of sensitisation to iron; however overall these data are poor and do not provide convincing evidence of a positive reaction in humans. There is also poor evidence in animal studies of sensitisation as a result of exposure to iron. The widespread exposure of iron and its role in biological processes, together with the extensive use of dietary supplements suggest that sensitisation is not a concern.
Germ cell mutagenicity:	With regard to their mutagenic properties, iron salts have been extensively tested in microbial and mammalian systems in vitro, and in mammalian and insect tests in vivo. There are inconsistencies in the in vitro findings, with a small number of studies returning positive results. This has been attributed to DNA damage following reduction of Fe(III) to Fe(II) with free radical or superoxide formation and subsequent redox recycling. This contrasts with the consistently negative results obtained in vivo where, presumably, more efficient control mechanisms exist that protect the body from iron-induced oxidative damage. It is concluded that iron salts are not genotoxic. Due to its potential pro-oxidant effects, there has been extensive research into possible links between iron and cancer development. These include many clinical investigations into the effects of oral (dietary) iron salts in humans and links to cancer. Although iron has been implicated in the development of cancers at various sites because of its role as a pro-oxidant, the UK Scientific Advisory Committee on Nutrition concluded that there is not enough evidence to reach conclusions for any specific links (EVM, 2003).
Reproductive toxicity:	Results from recent guideline oral screening studies performed on Ferrous Chloride and Ferrous Sulphate gave NOAELs for reproductive and developmental effects of >500 mg/kg body weight/day or >1000 mg/kg body weight/day (no adverse effects were observed), respectively. These findings are considered to be relevant to Ferric as well as Ferrous salts, as oxidation of Ferrous to Ferric occurs in the low pH of stomach before ingested iron is absorbed into the body. In humans, iron supplementation of about 5.8 to 11.7 mg/kg bw/day (for a 60kg individual) is routinely prescribed throughout pregnancy with no adverse effects on pregnancy outcome. Evidence of adverse effects on male testes has only been observed at acutely toxic, overload doses, at which some of the experimental animals died. Dose descriptor: Oral - LD50S >1000 mg/kg bw day Dermal: No data Inhalation: No data
Repeated dose toxicity:	No human data is available for Ferrous Sulphate and repeated dose toxicity and even though effects are shown in some animal studies the overall conclusion is that no classification should be assigned for all endpoints oral, inhalation and dermal. NOAEL 49 days -100mg/kg Ferrous Sulphate Heptahydrate, result = no effect.
Aspiration hazard:	No data, not an aspiration hazard.
Citric acid Acute toxicity: Primary irritant effect:	LD/LC50: Oral 3000mg/Kg (rat) On the skin: No irritant effect On the eye: Irritating effect Sensitisation: No sensitising effects known
Additional toxicological information:	The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version: Irritant
Routes of exposure:	The substance can be absorbed into the body by inhalation (of solution mist and dust) and by ingestion.

11.2. Other Information
None.



Fusion

Soluble Fe

Material Safety Data Sheet

Issue: 02 - Nov 2014
Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 7 of 8

SECTION 12: Ecological Information

12.1. Toxicity

Mixture not classified as toxic to the environment in accordance with Directive 1999/45/EC and CHIP regulations 2009.

12.2. Persistence and degradability

Information not available

12.3. Bioaccumulative potential

Information not available

12.4. Mobility in soil

Information not available

12.5. Results of PBT and vPvB assessment

Not classified

12.6. Other adverse effects

Not described

SECTION 13: Disposal Considerations

13.1. Waste treatment methods

Use only licensed waste disposal companies. Do not re-use empty containers for any purpose.

SECTION 14: Transport Information

This product is not regulated for transport (ADR/RID,IMDG,IATA)

SECTION 15: Regulatory Information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

This substance is classified and labelled in accordance with regulation 1999/45/EC, 1272/2008, the statutory instrument No.716 2009 Chemicals (Hazard Information and Packaging) regulations and the EC Fertiliser Regulations 2003, 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.

15.2. Chemical Safety Assessment

The supplier has not carried out evaluation of chemical safety.



Fusion **Soluble Fe** Material Safety Data Sheet

Issue: 02 - Nov 2014

Indigrow Ltd Safety data sheet according to Regulation (EC) No. 1907/2006. Page 8 of 8

16. OTHER INFORMATION

The information contained herein relates only to the designated formulation and may not be valid if product is used in combination with other substances. The information is to the best of our knowledge, belief and understanding, true, accurate and reliable at the date of issue. However, the information may neither be exhaustive or complete, and no warranty, guarantee or liability concerning the accuracy or completeness of the information is expressed or implied. It is the user's risk and sole responsibility to verify and satisfy their own criteria and duty of care concerning the validity of the information in relation to their application of the product.

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