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

1.1. Product identifier
Product form : Substance
Substance name : Iron (II) Sulfate Heptahydrate
EC Index No : 026-003-01-4
EC No : 231-753-5
CAS No : 7782-63-0
Product code : 12354-1KG
Type of product : Pure substance
Formula : FeSO\(_4\).7H\(_2\)O
Synonyms : copperas, green / copperas, heptahydrate / duretter, heptahydrate / duroferon, heptahydrate / exsiccated ferrous sulfate / exsiccated ferrous sulphate / feosol / feospan / fer in sol / fer gradumet / ferralyn / fer theron / ferrosulfate, heptahydrate / ferrous sulfate, heptahydrate / fesofer / fesotyme / green vitrol / haemofort / iron sulfate, heptahydrate / iron sulphate, heptahydrate / iron vitriol, heptahydrate / iron(II)sulfate-7-hydrate / ironate / ironmonosulfate, heptahydrate / ironous sulfate, heptahydrate / irospan / irosul / melanterite / melanterite, natural / mol-iron / presfersul / slow-Fe / sulfate, sugar / sulfurous / sulfuric acid iron salt, heptahydrate / sulfuric acid iron(II)salt, heptahydrate / sulfuric acid, iron(2+) salt (1:1), heptahydrate / vitriol, green, heptahydrate
BIG no : 15905

1.2. Relevant identified uses of the substance/mixture and uses advised against

1.2.1. Relevant identified uses
Use of the substance/mixture : Herbicide
Laboratory Chemical
Fertilizer: raw material
Animal feeding stuff: supplement
Food industry: supplement

1.2.2. Uses advised against
Restrictions on use : No additional information available.

1.3. Details of the supplier of the safety data sheet
ISOLAB GmbH
Bahnhofstrasse 10, D-97877 Wertheim - Germany
T +49 93 42 912 355 - F +49 93 42 912 357
prodsafe@isolab.de

1.4. Emergency telephone number

<table>
<thead>
<tr>
<th>Country</th>
<th>Organisation/Company</th>
<th>Address</th>
<th>Emergency number</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turkey</td>
<td>Ulusal Zehir Merkezi (UZEM) Retik Saydır Hizmeti Merkezi Başkanlığı</td>
<td>Camal Gürsel Cd. No: 18 Sihhiye Çankaya 06590 Ankara</td>
<td>114</td>
<td>Information is provided to public and medical personnel on poisoning incidents via 114.</td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
 Acute toxicity (oral), Category 4 H302
 Serious eye damage/eye irritation, Category 2 H319
 Skin corrosion/irritation, Category 2 H315

Full text of hazard classes and H-statements : see section 16

Specific concentration limits: (C => 25) Skin Irrit. 2, H315

Adverse physicochemical, human health and environmental effects
No additional information available
Iron (II) Sulfate Heptahydrate
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according to Regulation (EU) 2015/830
Date of issue: 01/03/2017

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP): GHS07

Signal word (CLP): Harmful, Irritant

Hazard statements (CLP):
- H302 - Harmful if swallowed
- H319 - Causes serious eye irritation
- H315 - Causes skin irritation

Precautionary statements (CLP):
- 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.

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron (II) Sulfate Heptahydrate</td>
<td>(CAS No) 7782-63-0</td>
<td>&lt;= 100</td>
</tr>
<tr>
<td></td>
<td>(EC No) 231-753-5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(EC Ind No) 026-003-01-4</td>
<td></td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general:

First-aid measures after inhalation:
Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact:
Wash immediately with lots of water. Soap may be used. Take victim to a doctor if irritation persists.

First-aid measures after eye contact:
Rinse immediately with plenty of water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists.

First-aid measures after ingestion:

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

Symptoms/injuries after inhalation:
AFTER INHALATION OF DUST: Dry/sore throat. Irritation of the respiratory tract. Irritation of the nasal mucous membranes.

Symptoms/injuries after skin contact:
Red skin. Itching. Tingling/irritation of the skin.

Symptoms/injuries after eye contact:
Irritation of the eye tissue.

Symptoms/injuries after ingestion:

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available
SECTION 5: Fire-fighting measures

5.1. Extinguishing media
Suitable extinguishing media: Adapt extinguishing media to the environment.
Unsuitable extinguishing media: No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture
Fire hazard: DIRECT FIRE HAZARD. Non combustible.
Explosion hazard: DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.

5.3. Advice for firefighters
Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions: Dilute toxic gases with water spray.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
6.1.1. For non-emergency personnel
Emergency procedures: Mark the danger area. Prevent dust cloud formation, e.g. by wetting. No naked flames. Wash contaminated clothes.
Measures in case of dust release: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders
No additional information available

6.2. Environmental precautions
No additional information available

6.3. Methods and material for containment and cleaning up
For containment: Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.
Methods for cleaning up: Stop dust cloud by humidifying. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Wash down leftovers with plenty of water. Wash clothing and equipment after handling.

6.4. Reference to other sections
No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Comply with the legal requirements. Remove contaminated clothing immediately. Thoroughly clean/dry the installation before use. Avoid raising dust. Keep away from naked flames/heat. Observe strict hygiene. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.

7.2. Conditions for safe storage, including any incompatibilities
Heat and ignition sources: KEEP SUBSTANCE AWAY FROM: heat sources.
Information on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) bases. water/moisture.
Storage area: Store in a dry area. Store at ambient temperature. Meet the legal requirements.
Special rules on packaging: SPECIAL REQUIREMENTS: hermertical. watertight. dry. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials: SUITABLE MATERIAL: cardboard. wood. synthetic material. glass.

7.3. Specific end use(s)
No additional information available
SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Iron (II) Sulfate Heptahydrate (7782-63-0)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Belgium</strong></td>
<td>Limit value (mg/m³)</td>
</tr>
<tr>
<td><strong>United Kingdom</strong></td>
<td>WEL TWA (mg/m³)</td>
</tr>
<tr>
<td><strong>United Kingdom</strong></td>
<td>WEL STEL (mg/m³)</td>
</tr>
<tr>
<td><strong>USA - ACGIH</strong></td>
<td>ACGIH TWA (mg/m³)</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Personal protective equipment:

Materials for protective clothing:
GIVE EXCELLENT RESISTANCE: butyl rubber, chlorosulfonated polyethylene. natural rubber. neoprene. polyurethane. PVC. nitrile rubber/PVC.
GIVE GOOD RESISTANCE: chloroprene rubber. chlorinated polyethylene. viton.
GIVE LESS RESISTANCE: nitrile rubber

<table>
<thead>
<tr>
<th>Condition</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent resistance:</td>
<td>Butyl rubber, Chlorosulfonated polyethylene, Natural rubber, Neoprene, Polyurethane, Polyvinylchloride (PVC) , Nitrile rubber/PVC</td>
</tr>
<tr>
<td>Good resistance:</td>
<td>Chloroprene rubber, Chlorinated polyethylene, Viton</td>
</tr>
<tr>
<td>Less resistance:</td>
<td>Nitrile rubber</td>
</tr>
</tbody>
</table>

Hand protection:
Gloves

Eye protection:
Face shield. In case of dust production: protective goggles

Skin and body protection:
Protective clothing. In case of dust production: head/neck protection. In case of dust production: dustproof clothing

Respiratory protection:
Dust production: dust mask with filter type P2

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Crystalline solid. Grains.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>278.02 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>Blue-green. On exposure to air: yellow-brown.</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Iron (II) Sulfate Heptahydrate
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9.2. Other information
VOC content : Not applicable
Other properties : Substance has acid reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity
On burning: release of toxic and corrosive gases/vapours (sulphur oxides). Oxidizes slowly in moist air. Reacts with (some) bases.

10.2. Chemical stability
Unstable on exposure to air.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
No additional information available

10.5. Incompatible materials
No additional information available

10.6. Hazardous decomposition products
No additional information available

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : Oral: Harmful if swallowed.

Iron (II) Sulfate Heptahydrate (7782-63-0)

<table>
<thead>
<tr>
<th>Effect</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>319 mg/kg</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Causes skin irritation. pH: 3 (5.0 %)</td>
</tr>
<tr>
<td>Serious eye damage/irritation</td>
<td>Causes serious eye irritation. pH: 3 (5.0 %)</td>
</tr>
<tr>
<td>Respiratory or skin sensitisation</td>
<td>Not classified</td>
</tr>
<tr>
<td>Germ cell mutagenicity</td>
<td>Not classified</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Not classified</td>
</tr>
</tbody>
</table>
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SECTION 12: Ecological information

12.1. Toxicity
Ecology - air: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
Ecology - water: Mild water pollutant (surface water). Maximum concentration in drinking water: 0.200 mg/l (iron) (Directive 98/83/EC); 250 mg/l (sulfate) (Directive 98/83/EC). Slightly harmful to fishes (LC50(96h) 100-1000 mg/l). Slightly harmful to invertebrates (Daphnia) (EC50 (48h): 100 - 1000 mg/l). Slightly harmful to bacteria (EC50: 100 - 1000 mg/l), pH shift. Not harmful to activated sludge.

Iron (II) Sulfate Heptahydrate (7782-63-0)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>925 mg/l (LC50; 96 h; Poecilia reticulata)</td>
</tr>
<tr>
<td>EC50 Daphnia 2</td>
<td>152 mg/l (EC50; 48 h)</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
Iron (II) Sulfate Heptahydrate (7782-63-0)


12.3. Bioaccumulative potential
Iron (II) Sulfate Heptahydrate (7782-63-0)

Bioaccumulative potential: Not bioaccumulative.

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Product/Packaging disposal recommendations: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Precipitate/make insoluble. Remove to an authorized dump (Class I).

Additional information: LWCA (the Netherlands): KGA category 05. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR): Not applicable
UN-No. (IMDG): Not applicable
UN-No. (IATA): Not applicable
UN-No. (ADN): Not applicable
UN-No. (RID): Not applicable

14.2. UN proper shipping name
Proper Shipping Name (ADR): Not applicable
Proper Shipping Name (IMDG): Not applicable
Proper Shipping Name (IATA): Not applicable
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Proper Shipping Name (ADN) : Not applicable
Proper Shipping Name (RID) : Not applicable

14.3. Transport hazard class(es)

ADR
Transport hazard class(es) (ADR) : Not applicable

IMDG
Transport hazard class(es) (IMDG) : Not applicable

IATA
Transport hazard class(es) (IATA) : Not applicable

ADN
Transport hazard class(es) (ADN) : Not applicable

RID
Transport hazard class(es) (RID) : Not applicable

14.4. Packing group

Packing group (ADR) : Not applicable
Packing group (IMDG) : Not applicable
Packing group (IATA) : Not applicable
Packing group (ADN) : Not applicable
Packing group (RID) : Not applicable

14.5. Environmental hazards

Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

- Overland transport
Not applicable

- Transport by sea
Not applicable

- Air transport
Not applicable

- Inland waterway transport
Not applicable

- Rail transport
Not applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations
No REACH Annex XVII restrictions
Iron (II) Sulfate Heptahydrate is not on the REACH Candidate List
Iron (II) Sulfate Heptahydrate is not on the REACH Annex XIV List
VOC content : Not applicable
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15.1.2. National regulations

Germany
VwVwS Annex reference : Water hazard class (WGK) 1, low hazard to waters (Classification according to VwVwS, Annex 1 or 2; ID No. 514)
WGK remark : Classification water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of 27 July 2005 (Anhang 2)

Netherlands
SZW-lijst van kankerverwekkende stoffen : The substance is not listed
SZW-lijst van mutagene stoffen : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vuchtbaarheid : The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : The substance is not listed

Denmark
Recommendations Danish Regulation : Young people below the age of 18 years are not allowed to use the product

15.2. Chemical safety assessment
No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADN</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways</td>
</tr>
<tr>
<td>ADR</td>
<td>European Agreement concerning the International Carriage of Dangerous Goods by Road</td>
</tr>
<tr>
<td>ATE</td>
<td>Acute Toxicity Estimate</td>
</tr>
<tr>
<td>BCF</td>
<td>Bioconcentration factor</td>
</tr>
<tr>
<td>CLP</td>
<td>Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008</td>
</tr>
<tr>
<td>EC50</td>
<td>Median effective concentration</td>
</tr>
<tr>
<td>IATA</td>
<td>International Air Transport Association</td>
</tr>
<tr>
<td>IMDG</td>
<td>International Maritime Dangerous Goods</td>
</tr>
<tr>
<td>LC50</td>
<td>Median lethal concentration</td>
</tr>
<tr>
<td>LD50</td>
<td>Median lethal dose</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent Bioaccumulative Toxic</td>
</tr>
<tr>
<td>RID</td>
<td>Regulations concerning the International Carriage of Dangerous Goods by Rail</td>
</tr>
<tr>
<td>vPvB</td>
<td>Very Persistent and Very Bioaccumulative</td>
</tr>
<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
</tr>
</tbody>
</table>


Full text of H- and EUH-statements:

<table>
<thead>
<tr>
<th>Acute Toxicity (Oral)</th>
<th>Eye Irrit. (2)</th>
<th>Skin Irrit. (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity (oral), Category 4</td>
<td>Serious eye damage/eye irritation, Category 2</td>
<td>Skin corrosion/irritation, Category 2</td>
</tr>
<tr>
<td>H302</td>
<td>H315</td>
<td>H319</td>
</tr>
<tr>
<td>Harmful if swallowed</td>
<td>Causes skin irritation</td>
<td>Causes serious eye irritation</td>
</tr>
</tbody>
</table>

SDS ISOLAB

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.