SECTION 1: IDENTIFICATION OF THE PREPARATION AND THE COMPANY

1.1 Product identifier:
The trade name of the mixture: AGROFERRUM
REACH No.: A registration number is not available for this substance as the substance or its uses are exempted from registration, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

1.2 Use of the preparation EC Fertiliser according to EC Directive 2003/2003 – C.2.5

1.3 Details of the company and MSDS Department
- Supplier: B+H Solutions GmbH
- Street address: Schnaiter Straße 13
- Country ID/Postcode/Place: DE 73630 Remshalden, Germany
- Telephone number/Fax: +49 7151 97 00 40 ; +49 7151 97 00 46
- E-mail address: info@bh-solutions.eu
- National contact: +49 7151 97 00-40

1.4 Emergency telephone number: +49 7151 97 00 40 or +43 664 526 79 26 (manufacturer)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
2.1.1 Classification according to Regulation (EC) No 1272/2008 [CLP]
Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.
2.1.2. Classification according to Directive 67/548/EEC
Not a hazardous substance or mixture according to EC-directives 67/548/EEC or 1999/45/EC.
2.1.3 Additional information: none

2.2 Label elements
The product does not need to be labelled in accordance with EC directives or respective national laws.
Precautionary statement(s), P, in full
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/ face protection.
P305+P351+P338IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Supplemental Hazards
None

2.3 Other hazards
In contact with water may release small amounts of explosive hydrogen gas (less than 1l/1kg.h).

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances: not applicable
3.2 Mixture:

Name :	CAS No. :	Weight % content	Classification according to 67/548/EEC	Classification according to Regulation (EC) No 1278/2008 (CLP).
Iron (Fe)	7439-89-6	(1 - 3)%	Iron is not classified as dangerous	Iron is not classified as dangerous
Magnetite (Fe_3O_4)	1309-38-2	(0 -1) %	Magnetite is not classified as dangerous	Magnetite is not classified as dangerous
Carbon (C)	7440-44-0	(0 -1) %	Carbon is not classified as dangerous	Carbon is not classified as dangerous
Water (H_2O)	7732-18-5	97 %	Water is not classified as dangerous	Water is not classified as dangerous
Surfactant	-	0,3 %	-	-

Slurry of water, zero-valent iron nanoparticles and iron oxides.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures:
- Eye contact: Rinse eyes with large amounts of low pressure water and get immediate medical attention.
- Skin contact: Wash affected area with soap and water, get medical attention if irritation develops.
- Inhalation: Move to fresh air and get immediate medical attention.

- Ingestion: Drink plenty of water and induce vomiting, get immediate medical attention.
- Self-protection of the first aider: It was found none.

4.2 Most important symptoms and effects, both acute and delayed
See section 2.2 and section 11.

4.3 Indication of any immediate medical attention and special treatment needed
No data available.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing media
Suitable extinguishing media: Extinguishing powder or sand.

5.2 Special hazards arising from the substance or mixture
After drying of the mixture dried powder could be accumulated with heat by oxidation in air, but will not be exploded. Do not scatter the particles.

5.3 Advice for firefighters
Warning! Use black glasses during firefighting – the danger of blindness. The metals burns with a dazzling light which can damage the retina. The eye protection is required. The protective equipment must be chosen according to the fire greatness. Appropriate protective breathing mask with independent air supply and possibly full protective clothing.
Cool by water the products in sealed containers which are near the fire. If possible, remove the products within undamaged containers from danger area. Contaminated extinguishing water must be stored separately, do not discharge it into the drains. The fire extinguishing water or used firefighting media with combustion residues must be disposed in accordance with relevant regulations.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency
6.1.1 For non-emergency personnel
a) Avoid spreading of product. Wear of suitable protective equipment to prevent any contamination of skin, eyes and personal clothing. For personal protection see section 8. Avoid ingestion of product.
b) Do not let the product come into contact with oxidizing agents, acids, acetylene and ammonia.
6.1.2 For emergency responders
Wear of suitable protective equipment to prevent any contamination of skin, eyes and personal clothing. For personal protection see section 8.

6.2 Environmental precaution
Prevent further leakage or spillage if safe to do so. Do not let product enter to drains without permission from local authority.

6.3 Methods and material for containment and cleaning up:
6.3.1 For containment: Cover with inert, absorbent material and remove to water-filled container (particles react with water to iron oxide form) and dispose as non-hazardous waste.
6.3.2 For cleaning up: Flush with plenty of water.
6.3.3 Other information: Spill area may be slippery.
6.4 Reference to other sections: For disposal see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling
7.1.1. Recommendations:
(a) Excess pressure to be let off by carefully opening the container before use. Never open the container at the temperature over 35°C. Ensure sufficient ventilation. Avoid sparks and other sources of ignition. Homogenize material and use the whole volume best. If unused material left, keep it sealed with inert gas (nitrogen, argon);
(b) Do not mix with oxidizing agents, acids, acetylene, ammonia;
(c) Do not allow the product conduction into drains, surface and ground water without permission from local authority.

7.1.2. Advice on general occupational hygiene:
(a) Do not eat, drink and smoke during the manipulation with the product;
(b) to wash hands after use; and
(c) to remove contaminated clothing and protective equipment before entering eating areas.

7.2 Conditions for safe storage, including any incompatibilities:
Store in a tightly sealed container in a cool (the most suitable temperatures are 1-5°C), dry and well-ventilated area. Material may degrade on storage unless refrigerated. Do not freeze!

7.3 Specific end use(s):
Part of the application mentioned in section 1.2 no other uses are reserved.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

ACGIH	TLV (1997)	TWA 5mg/m^3 as Fe
OSHA	PEL (1994)	TWA 10mg/m^3 as Fe_2O_3

8.2 Exposure controls: Avoid eye and skin contact. Before breaks and after work wash your hands.

(a) Eye/face protection Use of tightly fitted safety goggles (EN 166).

(b) Skin protection: Use appropriate protective gloves such as nitrile-rubber or butyl-rubber is recommended, minimum thickness of gloves 0.12 mm. Very appropriate is to use hand protective cream.
Use protective clothing with long sleeves, respectively safety proactive footwear (EN 344).

Environmental exposure controls

Do not allow the product conduction into drains, surface and ground water without permission from local authority.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

a) Appearance: liquid (nanomaterial)
- Color: black
- Granulometry: d50 < 50nm
- Specific surface: > 25m^2/g
- Specific gravity: 1.15 – 1.25 g/cm^3 (20°C)
- Surface charge: zero (0)
- Zeta potential: not applicable

b) Odour: no odour
c) Odour threshold: no odour
d) pH: 11 -12
e) Melting point/feezing point: not applicable
f) Boiling point and boiling range: not applicable
g) Flash point: not applicable
h) Evaporation rate: not applicable
(i) Flammability (solid, gas): not applicable
(j) Upper/lower flammability or explosive limits: not applicable
(k) Vapour pressure: not applicable
(l) Vapour density: not applicable
(m) Relative density: not applicable
(n) Solubility(ies): mixture is possible to thin in water
(o) Partition coefficient: n-octanol/water: not applicable
(p) Auto-ignition temperature: not applicable
(q) Decomposition temperature: not applicable
(r) Viscosity: not applicable
(s) Explosive properties: not applicable
(t) Oxidizing properties: not applicable

9.2 Other information

No data available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

With water - a small volume of hydrogen is generated in water reaction (less than 1l/1kg hr);

10.2 Chemical stability

Stable under recommended storage conditions;

10.3 Possibility of hazardous reactions:

Not applicable

10.4 Conditions to avoid:

Avoid air, elevated temperatures, ignition sources;

10.5 Incompatible materials:

Oxidizing agents, acids;

10.6 Hazardous decomposition products

Other decomposition products - no data available
In case of fire: see section 5

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

• Acute toxicity

Acute toxicity of the product	**g/l**			
LC_{50} (96 hours, fishes):	12,4			
EC_{50} (48 hours, daphnia):	55,2			
IC_{50} (72 hours, algaes):	4,5			

• Skin corrosion/irritation: no data available
• Serious eye damage/irritation: no data available
• Respiratory or skin sensitization: no data available
• Germ cell mutagenicity: no data available
• Carcinogenicity: no data available

- Reproductive toxicity: no data available
- Summary of evaluation of the CMR properties: no data available
- STOT-single exposure: no data available
- STOT-repeated exposure: no data available
- Aspiration hazard: no data available

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Acute toxicity of the product	g/l			
LC_{50} (96 hours, fishes):	12,4			
EC_{50} (48 hours, daphnia):	55,2			
IC_{50} (72 hours, algaes):	4,5			

12.2 Persistence and degradability
No data available.

12.3 Bioaccumulative potential
No data available.

12.4 Mobility in soil
No data available

12.5 Results of PBT and vPvB assessment
No data available.

12.6 Other adverse effects
No data available

12.7 Additional information
No data available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

13.1.1 Product
The mixture and its surpluses must be put only to specified area for waste and must be dispose together with the sorted waste, e.g. in waste incinerators.

13.1.2 Packaging
Empty containers completely. Hand empty containers over to authorized company that has permissions for their removal. Dispose waste in accordance with relevant local regulations with suitable devices. Sort and put other waste according to type of material into containers for recycling or to places specified by local authorities.

SECTION 14: TRASPORT INFORMATION

14.1 UN number
ADR/RID: - IMDG: - IATA: -

14.2 UN proper shipping name
ADR/RID: Not dangerous goods
IMDG: Not dangerous goods
IATA: Not dangerous goods

14.3 Transport hazard class(es)
ADR/RID: - IMDG: - IATA: -

14.4 Packaging group
ADR/RID: - IMDG: - IATA: -

14.5 Environmental hazards
ADR/RID: no IMDG Marine pollutant: no IATA: no

14.6 Special precautions for user
No data available

SECTION 15: REGULATORY INFORMATION

This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006.

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture:
No data available

15.2 Chemical Safety Assessment:
No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

The information in this MSDS is correct to the best of our knowledge, information and belief at the date of its publication and is, in our opinion consistent with the state of general scientific and technical knowledge at that date, but we cannot except liability for a loss, injury or damage which may result from its use. In compiling this MSDS we have taken into account all proper application of the material of which we are aware and any user of the material should consult us before applying it to any novel or unusual use. We must section out that it is the responsibility of any intermediate supplier to ensure that the information contained in this MSDS is passed to the ultimate user.