# Safety Data Sheet

Conforms to Regulation (EC) No. 1907/2006 (REACH),
Annex II, as amended by Regulation (UE) Nº 453/2010

# Ferro Bio

*Version 2.4 (last revision): 18/01/2022*

## 1. Identification of the substance and the company

**Identifying product (trade name):** Ferro Bio

**Identified uses of the product:** Adsorbent of hydrogen sulphide in biogas plants.

**Non recommended uses**: Other uses are not recommended unless an assessment has been conducted before the start of that use, showing that the risks associated with their use are controlled.

**Supplier's details:**
Name: Making Best Colors Chemical Industries SA (MBC Chemical Industries)
Address: C/ Fortuny 3 4ºd 28010, Madrid, Spain.
Phone number: +34 689 109 178 E-mail: info@mbcchemicals.com

**Emergency phone number:** +34 689109178 (24 h.)

## 2. Hazards identification

This material may contain respirable quartz as impurity; therefore, it has been classified as STOT RE 2 according to Regulation EC No. 1272/2008 (CLP). The determination of the Respirable Crystalline Silica (RCS) exposure level under working conditions should be carried out of workplaces

**Classification of the product according to Regulation (EC) Nº 1272/2008 (CLP):**

STOT RE 2. Specific target systematic toxicity-repeated exposure. Category 2
H373- May cause damage to lung through prolonged or repeated exposure by inhalation.

**Label elements according to Regulation (EC) Nº1272/2008 (CLP):**

Pictogram: 

Signal word: Warning

Hazard statement: H373- May cause damage to lung through prolonged or repeated exposure by inhalation.

**Precautionary statements:**

General precautionary statements. If medical advice is needed, have product container or label at hand (P101).
Prevention: Do not breathe dust (P260).
Response: Get medical advice/attention if you feel unwell (P314).

**Others non classified hazards:** Handling and/or processing of this material may generate dust, which may cause mechanical irritation of the eyes, skin, nose and throat

# 3. Composition and identification of ingredients

**Chemical identity**: Mixture of iron oxides and hydroxides.

| Minerals | Formula | % | CAS No. |
|---|---|---|---|
| Goethite/Hematite | α-FeOOH / α -$Fe_2O_3$ | 72 (±2) | 1310-44-1 / 1317-60-8 |
| Manganese minerals | Simple and complex anhydrous and hydrated Mn-oxides | 3 (±1) | - |
| Illite | $K_{0,7}Al_2[Al_{0,7}Si_{3,3}O_{10}](OH)_2$ | 5.0 (±2) | 12173-60-7 |
| Vermiculite | $Mg_3[Si_4O_{10}](OH)_2 \cdot 4H_2O$ | 3.5 (±1) | 1318-00-9 |
| Kaolinite | $Al_2Si_2O_5(OH)_4$ | 3.0 (±1) | 1318-74-7 |
| Quartz | α-$SiO_2$ | 6.0 (±2) | 14808-60-7 |
| Dolomite | $MgCO_3$+$CaMg(CO_3)_2$ | <2.0 | 546-93-0 / 16389-88-1 |
| Other minerals | Minor minerals of Ti, P y Zr | <1.0 | - |
| Water | H2O adsorbed | <2.0 | 7732-18-5 |

# 4. First aid measures

**In case of inhalation:** Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention if symptoms occur.

**In case of skin contact**: This product does not cause skin irritation by itself. In case of irritation wash the area with water and soap.

**In case of eye contact:** This product does not cause eye irritation by itself. In case of irritation flush eyes carefully with plenty of water during several minutes. Remove any contact lenses if it is an easy task and continue rinsing them.

**In case of ingestion:** Ingestion of high dosages of product is unlikely. If this occur, do not induce vomiting except by medical advice. If the victim is conscious and alert, give him/her water to rinse his mouth drinking straightaway large quantities of it. Look for medical advice immediately.

# 5. Fire-fighting measures

**Extinguishing suitable measures**: In case of fire, use water spray (fog), dry chemical or $CO_2$. Avoid the use of high-pressure water, which could generate dust.

**Specific hazards related with the product**: This product is not flammable or explosive.

**Special protective equipment and precautions for fire-fighters**: Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus with a full face-piece operated in positive pressure mode.

# 6. Accidental release measures

If this product is released it can generate dust. In that case, do not breathe the dust. in this case, avoid breathing dust. Provide adequate ventilation. Put on appropriate personal protective equipment (see Section 8). Hazard on slipping on spilt product.
This product is not hazardous for the environment, but in case of release avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
Vacuum or sweep up material and place in a designated, labelled waste container. Avoid creating dusty conditions and prevent wind dispersal. Dispose of via a licensed waste disposal contractor.

# 7. Handling and storage

**Handling:** Handle the product in well-ventilated areas or with a ventilation system which maintains the levels of breathable fractions of crystalline silica and ferric oxide under the limits of its occupational exposure (OEL/PEL) (see section 8). Do not breathe dust, avoid handling that can generate it and do not permit dust to collect on workplace. Avoid contact with eyes and skin to prevent mechanical irritation. Protective clothing, dust-proof goggles and leather/rubber gloves are recommended. Wash or vacuum clothing that has become dusty and observe good personal hygiene.

**Storage:** Store at moderate temperatures in a dry and well-ventilated area away from strong oxidizers and acids. Ensure containers are adequately labelled and protected against physical damage

# 8. Exposure control and personal protection

The Occupational exposure limits of the constituent substances are shown next:

| Iron Oxide (fume or respirable dust) (CAS 1309-37-1) | | | | | Quartz (CAS 14808-60-7) | | | |
|---|---|---|---|---|---|---|---|---|
| Country | Limit Value – 8 hours | | Limit value – Short term | | Limit Value – 8 hours | | Limit Value – Short term | |
| | ppm | mg/m$^3$ | ppm | mg/m$^3$ | ppm | mg/m$^3$ | ppm | mg/m$^3$ |
| Australia | | 5 | | | | 0.1 | | |
| Austria | | 5 (respirable aerosol) | | 10 (respirable aerosol) | | 0.15 (respirable aerosol) | | 10(respirable aerosol) |
| Belgium | 2 | 5 | | | | 0.1 | | |
| Canada | | 5 | | | | 0.1 | | |
| Chine | | Not available | | | | 1.0 (respirable fraction) | | |
| Denmark | | 3.5 | | 7 | | 0.3 (inhalable aerosol)<br>0.1 (respirable aerosol)<br>0.05 (respirable fraction) | | 0.6(respirable aerosol)<br>0.2(respirable aerosol) |
| Finland | | 5 | | | | 0.05 | | |
| Hungary | | 6 (respirable aerosol) | | | | 0.15 (respirable aerosol) | | |
| Ireland | | 5 | | 10 | | 0.1 | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| New Zealand | | 5 | | | | 0.2 | | |
| Poland | | 5 | | 10 | | Not available | | |
| Singapore | | 5 | | | | 0.1 (respirable fraction) | | |
| South Korea | | 5 | | | | 0.05 | | |
| Spain | | 5 | | | | 0.1 (respirable fraction) | | |
| Sweden | | 3.5 | | | | 0.1 (respirable fraction) | | |
| Switzerland | | 3 (respirable aerosol) | | | | 0.15 (respirable aerosol) | | |
| USA-NIOSH | | 5 (as Fe) | | | | 0.05 | | |
| USA-OSHA | | 10 | | | | 30/ (%silica+2) total dust<br>10/(%silica+2) respirable dust | | |
| United Kingdom | | 5 | | 10 | | 0.3 | | |

**Measures of personal protection and equipment (EPP):**
Eye protection: Dust-proof goggles are recommended if handling this product.
Skin protection: If prolonged or repeated skin contact is likely, bodysuit, boots and leather/rubber gloves are recommended to avoid mechanical irritation by friction.
Respiratory protection: If air concentrations of hazardous substances are unknown or higher than their occupational exposure limits, wear an approved air purifying dust respirator. Follow the regulations found in European Standard EN 149 or OSHA 29CFR 1910.134 to select the respirator. Considering that quartz has the lowest OEL in this product, use the table below to choose the adequate respirator.

**Environmental exposure controls**: Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

# 9. Physical and chemical properties

**Appearance:** Brown powder.
**Odour:** Odourless.
**Odour threshold:** Not applicable.
**pH:** The pH value of the water extract is 7.0-9.0
**Melting point/freezing point:** These products are solid in normal conditions. The melting or decomposition point of their main constituents are the following ones:

Hematite ($\alpha$-$Fe_2O_3$) ~1565ºC (2849ºF)
Goethite ($\alpha$-FeOOH) >1000ºC (>1832ºF)

**Initial boiling point:** Not applicable.
**Flash point:** Not-flammable.
**Evaporation rate:** Not applicable.
**Flammability (solid, gas):** Not-flammable.
**Upper / lower flammability or explosive limits:** Not applicable.
**Vapour pressure:** 0.0 mm Hg a 20 ºC (68 ºF).
**Vapour density:** Not applicable.
**Relative density:** 2.2-2.4 with respect to water at 3.98 ºC (39.2 ºF).
**Solubility:** Negligible (less than 0.20% wt.) in water at 20° C (68 ºF).
**Partition coefficient:** Not applicable.

**Auto-ignition temperature:** Not applicable.
**Decomposition temperature:** The α-Fe2O3 decomposes at 1565ºC. α-FeOOH decomposes at 180-200ºc.
**Viscosity:** Not applicable.
**Explosive properties:** Not applicable.
**Oxidising properties:** Not applicable.

# 10. Stability and reactivity

**Chemical stability:** Stable under ordinary conditions of use and storage.

**Incompatible materials:** Calcium hypochlorite, carbon monoxide, hydrogen peroxide, hydrazine, fluorine, bromine pentafluoride, chlorine trifluoride, oxygen difluoride and strong acids (hydrofluoric, performic…).

**Hazardous decomposition products:** None under normal conditions.

# 11. Toxicological information

| Component | Acute toxicity | | Species |
|---|---|---|---|
| Hydrated Iron Oxide α-FeOOH<br>CAS: 20344-49-4 / 51274-00-1 | LD50 oral | >10000 mg/kg | Rat |
| | LD50 skin | Not relevant | Rat |
| | LC50 inhalation | >5mg/ L/4h | Rat |
| Hematite [α-$Fe_2O_3$]<br>CAS: 1317-60.8/1309-37-1 | LD50 oral | >5000 mg/kg | Rat |
| | LD50 skin | Not relevant | Rat |
| | LC50 inhalation | >5mg/L/4h | Rat |
| Quartz [α-$SiO_2$]<br>CAS: 14808-60-7 | LD50 oral | >2000mg/kg | |
| | LD50 skin | >2000mg/kg | |
| | LC50 inhalation | >5mg/L/4h | |

# 12. Ecological information

| Component | Toxicity for | Test | Result | Species | Exp. |
|---|---|---|---|---|---|
| Hydrated Iron Oxide [α-FeOOH]<br>CAS: 20344-49-4 / 51274-00-1 | Microorganisms | ISO 8192 | Acute<br>EC50>10000 mg/l | Activated sludge | 3 h |
| | Crustaceans | OECD 202 | Acute<br>EC50>100 mg/l | Daphnia magna | 48 h |
| | Fish | OECD 203 | Acute<br>EC0>100000 mg/l | Danio Rerio | 96 h |
| Hematite [α-$Fe_2O_3$]<br>CAS:1317-60-8/ 1309-37-1 | Microorganisms | ISO 8192 | Acute<br>EC50>10000 mg/l | Activated Sludge | 3 h |
| | Crustaceans | OECD 202 | Acute<br>EC50>100 mg/l | Daphnia magna | 48 h |
| | Fish | | Acute<br>LC0>50000 mg/l | Danio Rerio | 96 h |

**Other adverse effects**: The accidental spill of this product may cause visual impact due to its brownish colour.

# 13. Disposal considerations

**Waste treatment methods:** Product residues and uncleaned empty containers should be packaged, sealed, labelled, and disposed of or recycled according to relevant national and local regulations

**Waste classification:** Not hazardous (defined by Directive of the EU 2008).

# 14. Transport information

The product is not covered by the international transport regulation of hazardous goods (IMDG, IATA, ADR/RID).

**Specific precautions for users:** Keep separated from foodstuffs.

# 15. Regulatory information

Specific regulation and legislation about safety, health and environment related to the product is described next:

**EUROPEAN COMMUNITY- Regulation (EU) 528/2012, (EU) 649/2012, (EC) 1907/2006 and (EC) 1272/2008:** None of the constituents of this product appears on the lists of the hazardous substances that are forbidden, restricted or submitted to special requirements by these regulations.

**IARC (International Agency for Research on Cancer):** Quartz (crystalline silica) is classified by IARC as a human carcinogen belonging to Group 1.

**WKG Classification (German Water Endangerment Class):** nwg (nicht wassergefährdend, non-hazardous to waters)

# 16. Other information

**Abbreviations and acronyms:**
**PBT**: Persistent, Bio accumulative y Toxic
**yPyB**: Very Persistent and very Bio accumulative
**DNEL**: Derived No Effect Level
**PNEC**: Predicted No Effect Concentration
**LD50**: Average Lethal Dose
**LC50**: Average Lethal Concentration
**EC50**: Average Effective Concentration

**Bibliographic references and data sources:**
Safety data sheets of the components of the mixture, and the website of the European Chemical Agency (ECHA).

**Employed method for the classification according to the Regulation (EC) 1272/2008:**
Mixture classification based on the component's classification.

**Recommendations for worker´s training:**
The workers who manipulate the product have received the information and the training related to the safety rules and equipment.

*The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process unless specified in the text. It is the user's responsibility to satisfy itself as to the suitability and completeness of such information for its own particular use*