Regulation concerning the Registration (EG) No. 2020/878 (REACH)

Material Safety Data Sheet

Ferroxa+

Iron hydroxide FeO(OH) – iron brown hematite

Section 1: Product and Company Information

1.1 Identifying product

Trade name FERROXA+

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses of the product

Adsorbent of hydrogen sulfide 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.

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Section 2: Hazards Identification

This material may contain quartz as impurity in a concentration lower than 10%. The size of these particles is between 30-40 µm therefore, is not consider Respirable Crystalline Silica (RCS). Nevertheless, we recommend respiratory protection in the presence of dust.

2.1 Classification of the substance or mixture according to Regulation (EC) N° 1272/2008 (CLP)

Not a hazardous substance or mixture according to Regulation (EC) No 1272/2008.

2.2 Label elements according to Regulation (EC) N°1272/2008 (CLP)

Pictogram: None
Signal word: None

2.3 Supplemental Hazard Statements

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Precautionary statements

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

Other 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.

Section 3: Composition / Identification of Ingredients

3.1 Substances

Chemical identity
Mixture of iron oxides, hydroxides and iron sulfate.

Minerals	Formula	%	CAS No.
Goethite/Hematite	α-FeOOH / α-Fe_2O_3	25	1310-44-1 / 1317-60-8
Iron sulfate	$FeSO_4$ H_20	40	13463-43-9
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	$MgCO_3$+Ca $Mg(CO_3)_2$	<2.0	546-93-0 / 16389-88-1
Other minerals	Minor minerals of Ti, P y Zr	<1.0	–
Water	H_2O absorbed	<4	7732-18-5

Section 4: First Aid Measures

In case of inhalation
Move exposed person to fresh air. 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 your eyes carefully with plenty of water for 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 occurs, 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.

Section 5: Fire Fighting Measures

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

Specific hazards related to the product
This product is not flammable or explosive.

Special protective equipment and precautions for fire-fighters
Fire-fighters should wear appropriate protective equipment.

Section 6: Accidental Release Measures

If this product is released it can generate dust. In that 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.

Section 7: Handling and Storage

Handling
Handle the product in well-ventilated areas or with a ventilation system which maintains the levels 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, dustproof 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.

Section 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/m³	ppm	mg/m³	ppm	mg/m³	ppm	mg/m³
Australia		5				0.1		
Austria		5				0.15 (respirable aerosol)		
Belgium	2	5 (respirable aerosol)		10 (respirable aerosol)		0.1		10 (respirable aerosol)
Canada		5				0.1		
China		Not available				1.0 (respirable fraction)		
Denmark		3.5		7		0.3 (inhalable aerosol) 0.1 (respirable aerosol) 0.05 (respirable fraction)		0.6 (respirable aerosol) 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 10/ (%silica+2) respir. dust		
United Kingdom		5		10		0.3		

Measures of personal protection and equipment (EPP)

Eye protection
Dust-proof goggles are recommended when 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.

Section 9: Physical and Chemical Properties

Appearance	Brown powder
Odor	Odorless
Odor 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 (α-Fe_2O_3) ~1,565 ºC (2,849 ºF) Goethite (α-FeOOH) >1,000 ºC (>1,832 ºF)
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
Vapor pressure	0.0 mm Hg a 20 ºC (68 ºF)
Vapor density	Not applicable
Relative density	2.2–2.4 with respect to water at 3.98 ºC (39.2 ºF)
Solubility	Aprox. 50% wt. in water at 20° C (68 ºF)
Partition coefficient	Not applicable
Auto-ignition temperature	Not applicable
Decomposition temperature	The α-Fe_2O_3 decomposes at 1,565 ºC. α-FeOOH decomposes at 180–200 ºc
Viscosity	Not applicable
Explosive properties	Not applicable
Oxidizing properties	Not applicable

Section 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.

Section 11: Toxicological Information

Component	Acute toxicity		Species
Hydrated Iron Oxide α-FeOOH CAS: 20344-49-4 / 51274-00-1	LD50 oral	>10,000 mg/kg	Rat
	LD50 skin	Not relevant	Rat
	LC50 inhalation	>5mg / L / 4 h	Rat
Hematite [α-Fe_2O_3] CAS: 1317-60.8 / 1309-37-1	LD50 oral	>5,000 mg/kg	Rat
	LD50 skin	Not relevant	Rat
	LC50 inhalation	>5mg / L / 4 h	Rat
Quartz [α-SiO_2] CAS: 14808-60-7	LD50 oral	>2,000 mg/kg	
	LD50 skin	>2,000 mg/kg	
	LC50 inhalation	>5mg / L / 4 h	
$FeSO_4$ CAS: 7720-78-7	LD50 oral	>1,520 mg/kg	Rat
	LD50 skin	Not relevant	Rat

Section 12: Ecological Information

Component	Toxicity for	Test	Result	Species	Exp.
Hydrated Iron Oxide [α- FeOOH] CAS: 20344-49-4 / 51274-00-1	Microorganisms	ISO 8192	Acute EC50 > 10,000 mg/l	Activated sludge	3 h
	Crustaceans	OECD 202	Acute EC50 > 100 mg/l	Daphnia magna	48 h
	Fish	OECD 203	Acute EC0 > 100,000 mg/l	Danio Rerio	96 h
Hematite [α-Fe_2O_3] CAS: 1317-60-8 / 1309-37-1	Microorganisms	ISO 8192	Acute EC50 > 10,000 mg/l	Activated sludge	3 h
	Crustaceans	OECD 202	Acute EC50 > 100 mg/l	Daphnia magna	48 h
	Fish		Acute LC0 > 100,000 mg/l	Danio Rerio	96 h
$FeSO_4$ CAS: 7720-78-7	Crustaceans		Acute EC50 > 100 mg/l	Daphnia magna	48 h

Section 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).

Section 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.

Section 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).

Section 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.

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