

# SAFETY DATA SHEET

(in accordance with Regulation (EU) 2020/878)

## Iron Filings

Version 1 Date of compilation: 9/10/2023



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### SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING.

#### 1.1 Product identifier.

Product Name:	<b>Iron Filings</b>
Synonyms:	Metallic iron, elemental iron
Product Code:	ALQ0007
Product type:	Substance, inorganic, metals (filings > 0.4 mm)
Chemical Name:	Iron
Molecular formula:	Fe
CAS No:	7439-89-6
EC No:	231-096-4
Registration No:	01-2119462838-24-XXXX
Molar mass:	55.85 g/mol

#### Description:

Iron filings are very small pieces of iron, used in scientific demonstrations to show the direction of a magnetic field. Iron represents magnetic properties, has a high hardness and density, used in multiple applications.

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

Use in industrial and professional applications  
Laboratory reagents/ analytical use  
Scientific demonstrations  
Visualization of the direction of the magnetic field  
School practices

#### Uses advised against:

All uses not specified in this section or in section 7.3. Due to lack of experience or data, the supplier cannot approve other unspecified use. Do not use in products that will be in direct contact with food.

#### 1.3 Details of the supplier of the safety data sheet.

Company:	<b>ALQUERA CIENCIA SL</b>
Address:	C/ Vilar de Donas 9
City:	28050 - Madrid
Province:	Madrid (Spain)
Telephone:	0034 620 88 75 97
E-mail:	info@alquera.com
Web:	<a href="https://www.alquera.com">https://www.alquera.com</a>

**1.4 Emergency telephone number:** 0034 620 88 75 97 (SDS) (Only available during office hours; Monday-Friday; 09:00-18:00)

### SECTION 2: HAZARDS IDENTIFICATION.

#### 2.1 Classification of the substance or mixture.

The product is not classified as hazardous within the meaning of Regulation (EC) No 1272/2008.

#### 2.2 Label elements.

The product is not classified as dangerous according to Regulation (EC) No 1272/2008.

#### 2.3 Other hazards.

The substance is not PBT or vPvB. According to Annex XIII of the REACH Regulation, inorganic substances do not require evaluation.

The product does not have endocrine disrupting properties.

The product in the delivered form is not capable of producing a dust explosion; but the accumulation of fine dust leads to a dust explosion hazard. Exposure by inhalation of fine powders in large quantities, may produce symptoms called metal fume fever which last 24/48 hours.

PBT: Persistent Bioaccumulative and Toxic.  
vPvB: very Persistent and very Bioaccumulative.

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### SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

#### 3.1 Substances.

Chemical Name: Iron  
Molecular formula: Fe  
CAS No: 7439-89-6  
EC No: 231-096-4  
Registration No: 01-2119462838-24-XXXX  
Molar mass: 55.85 g/mol

Identifiers	Name	Concentration	(*)Classification - Regulation (EC) No 1272/2008	
			Classification	Specifics concentration limits and Acute toxicity estimate
CAS No: 7439-89-6 EC No: 231-096-4	Iron (Fe)	95 - 100 %	-	-

Composition: cast steel

C 0.85 – 1.20%  
Mn 0.40 – 1.20%  
Si 0.40 – 1.20%  
S 0.05% max  
P 0.05% max

#### 3.2 Mixtures.

Not applicable.

### SECTION 4: FIRST AID MEASURES.

#### 4.1 Description of first aid measures.

Due to the composition and type of the substances present in the product, no particular warnings are necessary.

##### **Inhalation.**

If breathing stops, seek emergency medical attention. Take the victim into open air; keep them warm and calm. If breathing is irregular or stops, perform artificial respiration.

##### **Eye contact.**

Remove contact lenses, if present and if it is easy to do. Wash eyes with plenty of clean and cool water for at least 20 minutes while pulling eyelids up and seek medical assistance. Do not let the person to rub the affected eye.

##### **Skin contact.**

Remove contaminated clothing.

##### **Ingestion.**

Keep calm. NEVER induce vomiting.

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

Skin contact:

Possible burns from molten iron or hot work, if burns occur, flush area for at least 15 minutes under running cold water and seek immediate medical attention. Cuts from solid edges should be cleaned and treated, if required, seek immediate medical attention

Eye contact:

Dust may cause irritation.

Inhalation:

Effects of inhaling fumes remove to fresh air. Exposure by inhalation of fine powders in large quantities, may produce symptoms called metal fume fever which last 24/48 hours.

Ingestion:

Not relevant not a probable route of industrial exposure.

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

In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Notes to physician: Treat the symptoms.

## SECTION 5: FIREFIGHTING MEASURES.

### 5.1 Extinguishing media.

#### Suitable extinguishing media:

This substance is not flammable; use the most suitable agent to extinguish the surrounding fire.

Dry extinguishing powder, powder D (combustible metals), sand.

Avoid using high pressure media that could cause the formation of a potentially explosive dust-air mixture.

#### Unsuitable extinguishing media:

Do not use a direct stream of water to extinguish. In the presence of electrical voltage, you cannot use water or foam as extinguishing media. Extinguishing media that should not be used for safety reasons.

Water. Foam. Carbon dioxide (CO<sub>2</sub>).

### 5.2 Special hazards arising from the substance or mixture.

#### Special risks.

Exposure to combustion or decomposition products can be harmful to your health.

Fine dust dispersed in the air may ignite.

Molten metal may react violently with water. Use extinguishers appropriate for surrounding materials. Avoid having molten iron run onto or trap water under molten iron. Sudden violent release of steam and gases can occur when water is trapped under molten iron.

### 5.3 Advice for firefighters.

Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account.

#### Fire protection equipment.

According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and boots. Minimum emergency facilities and equipment should be available (fire blankets, portable first aid kit,...) in accordance with Directive 89/654/EC.

## SECTION 6: ACCIDENTAL RELEASE MEASURES.

### 6.1 Personal precautions, protective equipment and emergency procedures.

For exposure control and individual protection measures, see section 8.

Avoid contact with skin, eyes or clothing. Avoid inhalation and ingestion. Avoid dust formation.

### 6.2 Environmental precautions.

Product not classified as hazardous for the environment, avoid spillage as much as possible.

### 6.3 Methods and material for containment and cleaning up.

Sweep up and collect in appropriate containers for disposal. Avoid dust formation. Clean the area immediately with a suitable decontaminant. Do not use compressed air. Place in a container for recycling with a small shovel.

Deposit waste in closed and suitable containers for disposal, in compliance with local and national regulations (see section 13).

### 6.4 Reference to other sections.

For exposure control and individual protection measures, see section 8.

For later elimination of waste, follow the recommendations under section 13.

## SECTION 7: HANDLING AND STORAGE.

### 7.1 Precautions for safe handling.

The product does not require special handling measures, the following general measures are recommended:

For personal protection, see section 8.

In the application area, smoking, eating, and drinking must be prohibited. Follow legislation on occupational health and safety.

Never use pressure to empty the containers. They are not pressure-resistant containers. Keep the product in containers made of a material identical to the original.

Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid inhalation and ingestion. Avoid dust formation.

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### 7.2 Conditions for safe storage, including any incompatibilities.

The product does not require special storage measures. As general storage measures, sources of heat, radiation, electricity and contact with food should be avoided.

Keep away from oxidizing agents and from highly acidic or alkaline materials.

Store the containers between 5 and 25 ° C, in a dry and well-ventilated place.

Store according to local legislation. Observe indications on the label. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.

### PRECAUTIONS FOR SAFE HANDLING:

Special attention must be paid during handling to processes and/or systems that might raise clouds of very fine powder, likely to be flammable in their presence of primers.

### Recommendations to prevent toxicological risks:

After handling, wash hands with soap and water.

The product is not affected by Directive 2012/18/EU (SEVESO III).

### 7.3 Specific end use(s).

Except for the instructions already specified it is not necessary to provide any special recommendation regarding the uses of this product. See section 1.2.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

### 8.1 Control parameters.

Professional Exposure Environmental Limit Values :

Name	CAS N°	Country	Valor límite	ppm	mg/m <sup>3</sup>
Iron	7439-89-6	Spain [1]	Eight hours		10 (particulate matter not otherwise specified, inhalable fraction)
			Short term		3 (particulate matter not otherwise specified, respirable fraction)
Iron	7439-89-6	USA-OSHA	Eight hours		10 (particulate matter not otherwise specified, inhalable fraction)
			Short term		5 (particulate matter not otherwise specified, respirable fraction)

[1] According to the list of Environmental Occupational Exposure Limit Values adopted by the National Institute of Occupational Safety and Health (INSST) for the year 2023.

VENTILATION: Work area must be sufficiently ventilated to keep concentration below the exposure limit.

Respiratory protection: Dust safety masks are recommended when the dust concentration is more than 10 mg/m<sup>3</sup>. Apply technical measures to comply with the occupational exposure limits.

The product does NOT contain substances with Biological Limit Values.

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Concentration levels DNEL/DMEL:

Name	DNEL/DMEL	Type	Value
iron CAS No: 7439-89-6 EC No: 231-096-4	DNEL (Workers)	Inhalation, Chronic, Local effects	3 (mg/m <sup>3</sup> )
	DNEL (Consumers)	Inhalation, Chronic, Local effects	1,5 (mg/m <sup>3</sup> )
	DNEL (Consumers)	Oral, Chronic, Systemic effects	710 (µg/kg bw/day)

DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.

DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.

### 8.2 Exposure controls.

#### Measures of a technical nature:

Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system. Individual protection measures, such as personal protective equipment As a preventative measure it is recommended to use basic Personal Protective Equipment, in accordance with Regulation (EU) 2016/425. For more information on Personal Protective Equipment (storage, use, cleaning, maintenance, class of protection,...) consult the information leaflet provided by the manufacturer. For more information see subsection 7.1. All information contained herein is a recommendation which needs some specification from the labour risk prevention services as it is not known whether the company has additional measures at its disposal.

#### Respiratory protection

The use of protective equipment will be necessary in case of mist formation or in case of exceeding occupational exposure limits if they exist (see section 8.1). Wear respiratory protection in case of spray application/dust generation. Wear respiratory protection in case of prolonged exposure.

#### Specific protection for the hands

Replace the gloves at any sign of deterioration. Penetration time >480 min (permanent contact protection). The breakthrough time of the selected gloves should be in accordance with the intended period of use. Various factors (e.g. temperature) mean that in practice the breakthrough time of chemical-resistant protective gloves is significantly shorter than the EN374 standard. An increase in temperature due to hot substances, body heat, etc. and a weakening of the effective thickness due to expansion can lead to a significant shortening of the breakthrough time. For the selection of a specific type of glove for a given application, with a certain duration, should take into account (but not be limited to) relevant factors in the workplace, such as: other chemicals to be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential allergies to the glove material itself, etc.... Due to the wide variety of circumstances and possibilities, the instruction manual of the glove manufacturers should be taken into account. Gloves should be replaced immediately if signs of degradation are observed.

#### Additional emergency measures

Emergency shower: ANSI Z358-1, ISO 3864-1:2011, ISO 3864-4:2011

Eyewash stations: DIN 12 899, ISO 3864-1:2011, ISO 3864-4:2011

#### Recommendations to prevent toxicological risks:

Do not eat, drink or smoke during handling. After handling, wash hands with soap and water.

**Advice on personal protection is valid for high levels of exposure.**

**Choose personal protection adapted to the risks of exposure.**

<b>Concentration:</b>	<b>100 %</b>
<b>Uses:</b>	<b>Industrial use. Professional use.</b>
<b>Breathing protection:</b>	
PPE:	Filter mask for protection against gases and particles.
Characteristics:	«CE» marking, category III. The mask must have a wide field of vision and an anatomically designed form in order to be sealed and watertight.
CEN standards:	EN 136, EN 140, EN 405
Maintenance:	Should not be stored in places exposed to high temperatures and damp environments before use. Special attention should be paid to the state of the inhalation and exhalation valves in the face adaptor.
Observations:	Read carefully the manufacturer's instructions regarding the equipment's use and maintenance. Attach the necessary filters to the equipment according to the specific nature of the risk (Particles and aerosols: P1-P2-P3, Gases and vapours: A-B-E-K-AX), changing them as advised by the manufacturer.
Filter Type needed:	P2



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Hand protection:					
PPE:	Protective gloves.				
Characteristics:	«CE» marking, category II.				
CEN standards:	EN 374-1, En 374-2, EN 374-3, EN 420, EN 388.				
Maintenance:	Keep in a dry place, away from any sources of heat, and avoid exposure to sunlight as much as possible. Do not make any changes to the gloves that may alter their resistance, or apply paints, solvents or adhesives.				
Observations:	Gloves should be of the appropriate size and fit the user's hand well, not being too loose or too tight. Always use with clean, dry hands.				
Material:	PVC (polyvinyl chloride)	Breakthrough time (min.):	> 480	Material thickness (mm):	0,35
Material:	Nitrile	Breakthrough time (min.):	> 480	Material thickness (mm):	0,35
Material:	Neoprene	Breakthrough time (min.):	> 480	Material thickness (mm):	0,40
Eye protection:					
PPE:	Protective goggles against particle impacts.				
Characteristics:	«CE» marking, category II. Eye protector against dust and smoke.				
CEN standards:	EN 165, EN 166, EN 167, EN 168				
Maintenance:	Visibility through lenses should be ideal. Therefore, these parts should be cleaned daily. Protectors should be disinfected periodically following the manufacturer's instructions.				
Observations:	Some signs of wear and tear include: yellow colouring of the lenses, superficial scratching of the lenses, scraping etc.				
Skin protection:					
PPE:	Protective clothing/antistatic.				
Characteristics:	«CE» marking, category II. Protective clothing should not be too tight or loose in order not to obstruct the user's movements.				
CEN standards:	EN 340, EN 1149-1, EN 1149-2, EN 1149-3, EN 1149-5				
Maintenance:	In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer.				
Observations:	The protective clothing should offer a level of comfort in line with the level of protection provided in terms of the hazard against which it protects, bearing in mind environmental conditions, the user's level of activity and the expected time of use.				
PPE:	Work footwear, antistatic.				
Characteristics:	«CE» marking, category II.				
CEN standards:	EN ISO 13287, EN 20347, EN ISO 20344, EN ISO 20346				
Maintenance:	This product adapts to the first user's foot shape. That is why, as well as for hygienic reasons, it should not be used by other people.				
Observations:	Work footwear for professional use includes protection elements aimed at protecting users against any injury resulting from an accident				

## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

### 9.1 Information on basic physical and chemical properties.

#### Appearance:

Physical state (20°C): Solid –filings

Colour: grey (metallic).

Odour: odourless.

Odour threshold: N.A.

#### Volatility:

Boiling point or initial boiling point and boiling range: 2861 °C.

Relative vapour density (air=1): N.A.

Vapour pressure: 1.0 mmHg , 1787°C.

Evaporation rate : N.A. Not volatile.

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### Flammability:

Flammability: fine dust is combustible. Not readily flammable product.

Lower explosion limit: N.A.

Upper explosion limit: N.A.

Flash point: In accordance with column 2 of REACH Annex VII, the study does not need to be conducted, as the substance is inorganic.

Auto-ignition temperature: 350 °C at 1013 hPa (ECHA) (relative self-ignition temperature of solids).

### Product description:

Melting point: 1530 °C.

Freezing point: N.A.

Decomposition temperature: N.A.

pH: N.A. Insoluble in water.

Kinematic viscosity: Not applicable. Viscosity is only relevant to liquids. The substance is a metallic solid with melting point >1500°C, therefore this determination is not required.

Dynamic viscosity: Not applicable. Viscosity is only relevant to liquids. The substance is a metallic solid with melting point >1500°C, therefore this determination is not required.

Solubility: insoluble in water , 0.015 mg/L (22°C).

Hydrosolubility: insoluble in water , 0.015 mg/L (22°C).

Metallic iron rapidly oxidizes to form Fe(II), then Fe(II) slowly oxidizes to Fe(III) which finally precipitates in Fe(OH)<sub>3</sub> (rust red iron oxide).

Iron will not dissolve in water or dilute aqueous solutions of electrolytes, it is oxidized by (aerated) water but forms mainly insoluble oxides.

A seven day transformation/dissolution test according to the OECD guideline 29 and the GHS (Annex 10) protocol was run on iron powder at a mass loading of 100 mg/l and a pH of 6.0. Under the conditions of this test, the dissolution of Fe is 19.4 µg/L for the 7 -day endpoint.

Chemical equilibrium modelling (ETAP, 2010) was carried out to calculate a solubility limit for iron using iron (III). Solubility limits of 0.015, 0.0024 and 0.00001 mg/L were calculated at pH 6, 7, and 8, respectively (ECHA).

Liposolubility: N.A.

Partition coefficient n-octanol/water (log value): N.A.inorganic substance.

Bulk density: 4.5 g/cm<sup>3</sup>.

Relative density (water=1; 20°C): > 7.3 g/cm<sup>3</sup>. (iron: 7.87).

### Particle characteristics:

Grain form: angular.

Grain size distribution: 0.4-1.2 mm (see technical data sheet)

> 1.180 mm % 0

> 1.000 mm % ≤ 20

> 0.500 mm % ≥ 90

> 0.420 mm % ≥ 96

Microstructure: martensitic

N.A.= Not Available/Non- Applicable due to the nature of the product, not providing information property of its hazards

### 9.2 Other information

Explosiveness:

In accordance with column 2 of REACH Annex VII, the explosiveness of the substance does not need to be tested, because there are no chemical groups associated with explosive properties in the substance.

Oxidising properties:

No oxidising properties. In accordance with column 2 of REACH Annex VII, the oxidising properties do not need to be tested, because the substance is incapable of reacting exothermically with combustible materials based on the chemical structure. Iron powder contains iron in the zero valent state and to be oxidising it would require reduction of iron to a negative oxidation state. Such negative oxidation states do not exist for iron.

Stability in organic solvents:

In accordance with column 2 of REACH Annex VII, the stability in organic solvents does not need to be performed as the substance is inorganic.

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Dissociation constant:

In accordance with section 2 of REACH Annex VII, the dissociation constant study does not need to be performed as the substance is not soluble in water.

Hardness:

Rockwell C, °HRC ≥ 60

Drop point: N.A.

Scintillation: N.A.

% Solids: 100%

N.A.= Not Available/Non- Applicable due to the nature of the product, not providing information property of its hazards

The data corresponding to the product specifications can be found in the product technical data sheet. For further data on physical and chemical properties related to safety and environment, see sections 7 and 12.

### SECTION 10: STABILITY AND REACTIVITY.

#### 10.1 Reactivity.

The product does not present hazards by their reactivity under the recommended handling and storage conditions (see section 7). The substance is combustible in a finely distributed form (powder, dust).

#### 10.2 Chemical stability.

Stable under the recommended handling and storage conditions (see section 7).

POSSIBILITIES OF DECOMPOSITION:

in water: Iron is oxidized by moist air.

in acids: Acid contact may generate flammable gas.

Readily dissolved by diluted mineral acids and attacked or dissolved by organic acids; not appreciably attacked by cold concentrated H<sub>2</sub>SO<sub>4</sub> or HNO<sub>3</sub> but is attacked by hot acids.

#### 10.3 Possibility of hazardous reactions.

Reacts with:

Halogens, halides, concentrated strong acids, alkali oxides, highly oxidizing agents.

#### 10.4 Conditions to avoid.

Avoid any improper handling.

Avoid contact with acids. Heat, flame, ignition sources.

Avoid dust formation. Incompatible products. Exposure to moisture.

#### 10.5 Incompatible materials.

Keep away from oxidising agents and from highly alkaline or acidic materials in order to prevent exothermic reactions.

#### 10.6 Hazardous decomposition products.

No decomposition if used for the intended uses.

Hazardous Decomposition Products:

Thermal oxidative decomposition can produce fumes containing oxides of iron as well as other elements.

### SECTION 11: TOXICOLOGICAL INFORMATION.

Product classification has been carried out using the conventional calculation method of Regulation (EC) No 1272/2008(CLP)/ extrapolation with similar products.

#### 11.1 Information on hazard classes as defined in Regulation (EC) N° 1272/2008.

##### Toxicological information.

Name	Acute toxicity			
	Type	Test	Kind	Value
iron	Oral	LD50	Rat	> 30 000 mg/kg [1]
				[1] GESTIS: Indian Journal of Pharmacy. Vol. 13, Pg. 240, 1951./TOXNET
	Dermal			
	Inhalation			

CAS No: 7439-89-6 EC No: 231-096-4

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The principal risk to human health presented by "iron" dust is related to the concentration of dust in the air acting as a nuisance dust. The higher the concentration of dust the greater the risk of irritation to the respiratory system and mechanical irritation to the eyes.

### Iron compounds (general):

Inhalation of ferric salts as dusts and mists is irritating to the respiratory tract.  
If inhaled, iron is a local irritant to the lung and gastrointestinal tract.

### Products in powder form:

Exposure to airborne concentrations above legal or recommended exposure limits may cause irritation of the nose, throat or lungs.

Exposure to concentrations above legal or recommended exposure limits may cause mild eye irritation (redness, tearing).

Although the product is not irritating, direct contact with the eyes may cause discomfort characterized by tearing or redness due to mechanical contact/abrasion.

Mechanical/abrasive skin contact may cause redness.

a) acute toxicity;

Not conclusive data for classification.

### Inhalation:

The major route of exposure for metallic iron powder at workplaces is via the respiratory tract.

As with dusts in general, it must be assumed that I metal dust is deposited in the respiratory tract depending on the particle size, and that fine dust can reach the alveoli of the lungs. However, substance-specific information is not available.

Moreover, studies on the iron oxides that are poorly soluble in water showed that a minor proportion of soluble iron ions can occur in the lungs and be absorbed into the cells depending on the specific characteristics of the particles (GESTIS).

A series of inhalation and intratracheal instillation studies showed carbonyl iron to be without effects on survival or local sublethal effects. Although the highest air concentration tested (250 mg/m<sup>3</sup>) was lower than the upper threshold concentration determining classification, the results indicate that metallic iron needs not to be classified for acute inhalation toxicity (ECHA).

### Skin:

Due to the insolubility of Iron in water, significant absorption via the intact skin should not be expected under normal occupational conditions (GESTIS).

The lack of systemic bioavailability of iron upon dermal exposure makes testing for acute dermal toxicity redundant and allows for the conclusion that classification for this endpoint is not necessary (ECHA).

### Ingestion, gastrointestinal tract:

It must be assumed that particles that are removed from the respiratory tract via mucociliary clearance mechanisms or swallowed directly are at least partially dissolved in the digestive tract and released iron ions are then absorbed depending on the iron supply status and the diet.

Absorption from the gastrointestinal tract after intake of iron compounds is usually approx. 10% and occurs chiefly as iron(II) ions via the small intestines.

Absorption follows an active saturation process. The percentage of absorbed iron ions decreases with increasing supplied dose; however, the total absorbed amount increases with increasing supplied doses. However, absorption of iron after oral intake of iron powder seems to be comparatively low (GESTIS).

A series of oral acute toxicity studies with iron powders yielded LD50 values that were much higher than the limit below which a substance needs to be classified for acute oral toxicity (ECHA).

b) skin corrosion/irritation;

Not conclusive data for classification.

May cause irritation due to mechanical abrasion.

c) serious eye damage/irritation;

Not conclusive data for classification.

May cause irritation due to mechanical abrasion.

d) respiratory or skin sensitisation;

Not conclusive data for classification.

e) germ cell mutagenicity;

Not conclusive data for classification.

f) carcinogenicity;

Not conclusive data for classification.

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g) reproductive toxicity;  
Not conclusive data for classification.  
No reprotoxic effect was observed in an 8-generation study in which rats were exposed to iron oxide in the feed with an estimated iron intake of approx. 25 mg per day (details were not provided, based on a daily feed consumption of 20 g) (GESTIS).

h) STOT-single exposure;  
Not conclusive data for classification.

i) STOT-repeated exposure;  
Not conclusive data for classification.

j) aspiration hazard;  
Not conclusive data for classification.

### 11.2 Information on other hazards.

#### Endocrine disrupting properties

The substance does not contain components with endocrine-disrupting properties with effects on human health. according to REACH Article 57(f) or Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### Other information

There is no information available on other adverse health effects.

#### Biotransformation and excretion:

For humans, iron, absorbed in ionic condition, is an essential element, which is an important biocatalyst and component of many enzymes, such as haemoglobin and myoglobin. The body of an adult individual contains approx. 3–5 g iron (45–60 mg per kg of body weight), of which about 60% is bound to haemoglobin and about 10–15% to myoglobin. Only 4 mg iron (0.1%) are used as transferrin-bound transport iron in the blood. The normal serum iron concentration ranges between 40 and 150 µg/dl. Active elimination of iron with the urine, the bile or the sweat is not possible. Daily elimination is approx. 1 mg via exfoliated epithelial cells in the gastrointestinal tract and the skin as well as their adnexa. (GESTIS).

## SECTION 12: ECOLOGICAL INFORMATION.

Product classification has been carried out using the conventional calculation method of Regulation (EC) No 1272/2008(CLP)/ extrapolation with similar products.

### 12.1 Toxicity.

No information is available regarding the ecotoxicity.

### 12.2 Persistence and degradability.

No information is available regarding the biodegradability.

Data could mostly be waived because the substance is inorganic and highly insoluble in water.

Hydrolysis does not need to be examined and is not expected to occur since iron is insoluble in water.

No information is available on the degradability

No information is available about persistence and degradability of the product.

### 12.3 Bioaccumulative potential.

#### Information about the bioaccumulation.

Name	Bioaccumulation			
	Log Pow	BCF	NOECs	Level
iron CAS No: 7439-89-6      EC No: 231-096-4	inorganic	-	-	-

Data could mostly be waived because the substance is inorganic and highly insoluble in water.

### 12.4 Mobility in soil.

No information is available about the mobility in soil.

Data could mostly be waived because the substance is inorganic and highly insoluble in water.

The product must not be allowed to go into sewers or waterways.

Prevent penetration into the ground.

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### 12.5 Results of PBT and vPvB assessment.

According to Annex XIII of the REACH Regulation, inorganic substances do not require evaluation.

PBT assessment does not apply.

#### Justification:

Regarding this assessment, Annex XIII of the REACH Regulation (EC) No. 1907/2006 is not applicable to inorganic substances. As iron is not bio-available, owing to its extreme insolubility in water, it is not systemically available or bioaccumulative, and hence it does not fulfil either of the PBT and vPvB criteria for classification.

### 12.6 Endocrine disrupting properties.

This product does not contain components with environmental endocrine disrupting properties  $\geq 0.1\%$ .

### 12.7 Other adverse effects.

The product is not affected by the Regulation (EC) No 1005/2009 of the European Parliament and of the Council of 16 September 2009 on substances that deplete the ozone layer.

No information is available about other adverse effects for the environment.

## SECTION 13: DISPOSAL CONSIDERATIONS.

### 13.1 Waste treatment methods.

Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.

#### Waste management (disposal and evaluation):

Consult the authorized waste service manager on the assessment and disposal operations. In case the container has been in direct contact with the product, it will be processed the same way as the actual product. Otherwise, it will be processed as non-dangerous residue. We do not recommended disposal down the drain. See section 6.2.

#### Regulations related to waste management:

In accordance with Annex II of Regulation (EC) No 1907/2006 (REACH) the community or state provisions related to waste management are stated Community legislation:

Follow the provisions of Directive 2008/98/EC, Decision 2014/955/UE, Directive (UE) 2018/851, Directive (UE) 2019/904 regarding waste management. EU-legislation: Regulation (EU) No. 1357/2014 and modifications.

#### Spill/Leak Procedures:

Not applicable to iron in solid state.

For spills involving molten iron, personnel should be protected against contact with eyes and skin and avoid inhalation of dust/fume. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Do not release into sewers or waterways. Collect material in appropriate, labeled containers for recovery or disposal in accordance with local regulations.

#### Disposal:

Any excess product can be recycled for further use, disposed in an appropriately permitted waste landfill, or disposed by other methods, which are in accordance with local regulations.

#### Waste classification according to the European Waste Catalogue:

12 WASTES FROM SHAPING AND PHYSICAL AND MECHANICAL SURFACE TREATMENT OF METALS AND PLASTICS

12 01 wastes from shaping and physical and mechanical surface treatment of metals and plastics

12 01 01 ferrous metal filings and turnings

## SECTION 14: TRANSPORT INFORMATION.

Transportation is not dangerous. In case of road accident causing the product's spillage, proceed in accordance with point 6.

### 14.1 UN number or ID number.

Transportation is not dangerous.

### 14.2 UN proper shipping name.

Description:

ADR/RID: Not classified as hazardous for transport.

IMDG: Not classified as hazardous for transport.

ICAO/IATA: Not classified as hazardous for transport.

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### 14.3 Transport hazard class(es).

Transportation is not dangerous.

### 14.4 Packing group.

Transportation is not dangerous.

### 14.5 Environmental hazards.

Transportation is not dangerous.

Transport by ship, FEm – Emergency sheets (F – Fire, S - Spills): Not applicable.

### 14.6 Special precautions for user.

Transportation is not dangerous.

### 14.7 Maritime transport in bulk according to IMO instruments.

Not classified as hazardous for transport.

## SECTION 15: REGULATORY INFORMATION.

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

#### Volatile organic compound (VOC)

VOC content (p/p): 0 %

VOC content: 0 g/l

The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.

The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.

Kind of pollutant to water (Germany): nwg: Non-hazardous to water. (Autoclassified according to the AwSV Regulations).

Substances included in Annex XIV of REACH (authorisation list) and expiry date: Not listed.

SVHC substances candidate for inclusion in Annex XIV of Regulation (EC) No 1907/2006: Not listed.

This product does not contain substances restricted by the REACH regulation.

#### **Special provisions for the protection of humans or the environment:**

It is recommended to use the information compiled in this safety data sheet as input data in a risk assessment of the local circumstances to establish the necessary risk prevention measures for the handling, use, storage and disposal of the product.

### 15.2 Chemical safety assessment.

No Chemical Safety Assessment has been carried out for this substance by the supplier.

## SECTION 16: OTHER INFORMATION.

### **Legislation related to safety data sheets:**

The Safety Data Sheet shall be supplied in an official language of the country where the product is placed on the market. This safety data sheet has been designed in accordance with ANNEX II-Guide to the compilation of safety data sheets of Regulation (EC) No 1907/2006 (COMMISSION REGULATION (EU) 2020/878).

### **Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:**

Physical hazards	On basis of test data
Health hazards	Calculation method
Environmental hazards	Calculation method

It is recommended that the product only be employed for the purposes advised.

### **Abbreviations and acronyms used:**

ADR/RID: Agreement concerning the International Carriage of Dangerous Goods by Road.

AwSV: Facility Regulations for handling substances that are hazardous for the water.

BCF: Bioconcentration factor.

CEN: European Committee for Standardization.

DMEL: Derived Minimal Effect Level, exposure level corresponding to a low risk, that risk should be considered a tolerable minimum.

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DNEL: Derived No Effect Level, level of exposure to the substance below which adverse effects are not anticipated.  
EC50: Half maximal effective concentration.  
IATA: International Air Transport Association.  
ICAO: International Civil Aviation Organization.  
IMDG: International Maritime Code for Dangerous Goods.  
PPE: Personal protection equipment.  
LC50: Lethal concentration, 50%.  
LD50: Lethal dose, 50%.  
NOEC: No observed effect concentration.  
PNEC: Predicted No Effect Concentration, concentration of the substance below which adverse effects are not expected in the environmental compartment.  
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.  
SDS: Safety Data Sheet.  
WGK: Water hazard classes.

Key literature references and sources for data:

<http://eur-lex.europa.eu/homepage.html>

<http://echa.europa.eu/>

Regulation (EU) 2020/878.

Regulation (EC) No 1907/2006.

Regulation (EC) No 1272/2008.

GESTIS SUBSTANCE DATABASE.

The information given in this Safety Data Sheet has been drafted in accordance with COMMISSION REGULATION (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemical substances and mixtures (REACH).

The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.