Safety data sheet

according to Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU

Iron ≥ 99,5%, p.a., powder

article number: **3718**
Version: **1.0 en**

date of compilation: 2017-03-01

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

1.1 Product identifier

Identification of the substance	**Iron**
Article number	3718
Registration number (REACH)	01-2119462838-24-xxxx
EC number	231-096-4
CAS number	7439-89-6

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

Identified uses: laboratory chemical

1.3 Details of the supplier of the safety data sheet

Carl Roth GmbH + Co KG
Schoemperlenstr. 3-5
D-76185 Karlsruhe
Germany

Telephone: +49 (0) 721 - 56 06 0
Telefax: +49 (0) 721 - 56 06 149
e-mail: sicherheit@carlroth.de
Website: www.carlroth.de

Competent person responsible for the safety data sheet : Department Health, Safety and Environment

e-mail (competent person) : sicherheit@carlroth.de

1.4 Emergency telephone number

Emergency information service **Poison Centre Munich: +49/(0)89 19240**

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008 (CLP)

Classification acc. to GHS

Section	Hazard class	Hazard class and category	Hazard statement
2.7	flammable solid	(Flam. Sol. 2)	H228
2.11	self-heating substance and mixture	(Self-heat. 1)	H251

2.2 Label elements

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

Signal word **Danger**

Pictograms

Hazard statements

H228	Flammable solid
H251	Self-heating: may catch fire

Precautionary statements

Precautionary statements - prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P243	Take action to prevent static discharges.

Precautionary statements - response

P370+P378	In case of fire: Use metal fire powder to extinguish.

Labelling of packages where the contents do not exceed 125 ml
Signal word: **Danger**
Symbol(s)

H251	Self-heating: may catch fire.

2.3 Other hazards

There is no additional information.

SECTION 3: Composition/information on ingredients

3.1 Substances

Name of substance	Carbonyl Iron powder
Registration number (REACH)	01-2119462838-24-xxxx
EC number	231-096-4
CAS number	7439-89-6
Molecular formula	Fe
Molar mass	55,85 $^{g}/_{mol}$

SECTION 4: First aid measures

4.1 Description of first aid measures

General notes

Take off contaminated clothing.

Following inhalation

Provide fresh air. In all cases of doubt, or when symptoms persist, seek medical advice.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Rinse cautiously with water for several minutes. In all cases of doubt, or when symptoms persist, seek medical advice.

Following ingestion

Rinse mouth. Call a doctor if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Irritant effects, Nausea, Vomiting, Diarrhoea, Cardiac arrhythmias

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

use metal fire powder to extinguish, dry sand, cement

Unsuitable extinguishing media

foam, water

5.2 Special hazards arising from the substance or mixture

Self-heating in large quantities; may catch fire. Water-reactive (in contact with water releases flammable gases).

5.3 Advice for firefighters

Fight fire with normal precautions from a reasonable distance. Wear self-contained breathing apparatus.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Control of dust. Avoidance of ignition sources.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Danger of explosion.

6.3 Methods and material for containment and cleaning up

Advices on how to contain a spill

Covering of drains.

Advices on how to clean up a spill

Take up mechanically. Control of dust.

Other information relating to spills and releases

Place in appropriate containers for disposal.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Avoid dust formation. Provide adequate ventilation. When not in use, keep containers tightly closed.

• Measures to prevent fire as well as aerosol and dust generation

Keep away from heat, hot surfaces, sparks, open flames. No smoking. Take precautionary measures against static discharge. Removal of dust deposits.

Advice on general occupational hygiene

Wash hands before breaks and after work.

7.2 Conditions for safe storage, including any incompatibilities

Keep container tightly closed. Store in a dry place.

Incompatible substances or mixtures

Observe hints for combined storage.

Consideration of other advice

• Ventilation requirements

Use local and general ventilation.

• Specific designs for storage rooms or vessels

Recommended storage temperature: 15 - 25 °C.

7.3 Specific end use(s)

No information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

National limit values

Occupational exposure limit values (Workplace Exposure Limits)

Coun-try	Name of agent	Notation	Identifier	TWA [mg/m³]	STEL [mg/m³]	Source
GB	dust	i	WEL	10		EH40/2005
GB	dust	r	WEL	4		EH40/2005

Notation

i	Inhalable fraction
r	Respirable fraction
STEL	Short-term exposure limit: a limit value above which exposure should not occur and which is related to a 15-minute period unless otherwise specified
TWA	Time-weighted average (long-term exposure limit): measured or calculated in relation to a reference period of 8 hours time-weighted average

Relevant DNELs/DMELs/PNECs and other threshold levels

• human health values

Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
DNEL	3 mg/m³	human, inhalatory	worker (industry)	chronic - local effects

8.2 Exposure controls

Individual protection measures (personal protective equipment)

Eye/face protection

Use safety goggle with side protection.

Skin protection

• hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

• type of material

NBR (Nitrile rubber)

• material thickness

>0,11 mm

• breakthrough times of the glove material

>480 minutes (permeation: level 6)

• other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended.

Respiratory protection

Respiratory protection necessary at: Dust formation. Particulate filter device (EN 143). P1 (filters at least 80 % of airborne particles, colour code: White).

Environmental exposure controls

Keep away from drains, surface and ground water.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state	solid (powder)
Colour	grey
Odour	odourless
Odour threshold	No data available

Other physical and chemical parameters

pH (value)	This information is not available.
Melting point/freezing point	1.538 °C
Initial boiling point and boiling range	2.735 °C
Flash point	This information is not available.
Evaporation rate	no data available
Flammability (solid, gas)	Flammable solid in accordance with GHS criteria Self-heating substance in accordance with GHS criteria
Explosive limits	
• lower explosion limit (LEL)	(100 g/m³)
• upper explosion limit (UEL)	this information is not available
Explosion limits of dust clouds	these information are not available
• lower explosion limit (LEL)	100 g/m³
Vapour pressure	This information is not available.
Density	7,87 $^{g}/_{cm^3}$ at 20 °C
Vapour density	This information is not available.
Bulk density	2.500 - 3.500 $^{kg}/_{m^3}$
Relative density	Information on this property is not available.

Solubility(ies)	
Water solubility	insoluble
Partition coefficient	
n-octanol/water (log KOW)	This information is not available.
Auto-ignition temperature	>150 °C
Decomposition temperature	no data available
Viscosity	not relevant (solid matter)
Explosive properties	Shall not be classified as explosive
Oxidising properties	none

9.2 Other information

Particle size	~ 10 µm
Temperature class (EU, acc. to ATEX)	T4 (Maximum permissible surface temperature on the equipment: 135°C)

SECTION 10: Stability and reactivity

10.1 Reactivity

Self-heating property. Risk of ignition. Dust explosibility.

10.2 Chemical stability

The material is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3 Possibility of hazardous reactions

Violent reaction with: Ammonium compounds, Oxidisers, Chlorine, Fluorine, Nitrate, Hydrogen peroxide, Hydrogen sulphide (H2S), Peroxides, Aldehydes, Acids, Water, Perchlorates,
=> Explosive properties

10.4 Conditions to avoid

Protect from moisture.

10.5 Incompatible materials

There is no additional information.

10.6 Hazardous decomposition products

Hazardous combustion products: see section 5.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Shall not be classified as acutely toxic.

Exposure route	Endpoint	Value	Species	Source
oral	LD50	30.000 $^{mg}/_{kg}$	rat	TOXNET

Skin corrosion/irritation
Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation
Shall not be classified as seriously damaging to the eye or eye irritant.

Respiratory or skin sensitisation
Shall not be classified as a respiratory or skin sensitiser.

Summary of evaluation of the CMR properties
Shall not be classified as germ cell mutagenic, carcinogenic nor as a reproductive toxicant

• Specific target organ toxicity - single exposure
Shall not be classified as a specific target organ toxicant (single exposure).

• Specific target organ toxicity - repeated exposure
Shall not be classified as a specific target organ toxicant (repeated exposure).

Aspiration hazard
Shall not be classified as presenting an aspiration hazard.

Symptoms related to the physical, chemical and toxicological characteristics

• If swallowed
nausea, vomiting, diarrhoea

• If in eyes
slightly irritant

• If inhaled
Inhalation of dust may cause irritation of the respiratory system

• If on skin
Frequently or prolonged contact with skin may cause dermal irritation

Other information
Other adverse effects: Cardiac arrhythmias

SECTION 12: Ecological information

12.1 Toxicity

acc. to 1272/2008/EC: Shall not be classified as hazardous to the aquatic environment.

12.2 Process of degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

12.3 Bioaccumulative potential

Data are not available.

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Other adverse effects

Data are not available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

This material and its container must be disposed of as hazardous waste. Dispose of contents/container in accordance with local/regional/national/international regulations.

Sewage disposal-relevant information

Do not empty into drains.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used.

13.2 Relevant provisions relating to waste

The allocation of waste identity numbers/waste descriptions must be carried out according to the EEC, specific to the industry and process.

13.3 Remarks

Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities. Please consider the relevant national or regional provisions.

SECTION 14: Transport information

14.1	UN number	**3089**
14.2	UN proper shipping name	**METAL POWDER, FLAMMABLE, N.O.S.**
	Hazardous ingredients	Iron
14.3	Transport hazard class(es)	
	Class	4.1 (flammable solids)
14.4	Packing group	III (substance presenting low danger)
14.5	Environmental hazards	none (non-environmentally hazardous acc. to the dangerous goods regulations)

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

• Transport of dangerous goods by road, rail and inland waterway (ADR/RID/ADN)

UN number	3089
Proper shipping name	METAL POWDER, FLAMMABLE, N.O.S.
Particulars in the transport document	UN3089, METAL POWDER, FLAMMABLE, N.O.S., 4.1, III, (E)
Class	4.1
Classification code	F3
Packing group	III
Danger label(s)	4.1

Special provisions (SP)	552
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg
Transport category (TC)	3
Tunnel restriction code (TRC)	E
Hazard identification No	40
Emergency Action Code	4Y

• International Maritime Dangerous Goods Code (IMDG)

UN number	3089
Proper shipping name	METAL POWDER, FLAMMABLE, N.O.S.
Particulars in the shipper's declaration	UN3089, METAL POWDER, FLAMMABLE, N.O.S., 4.1, III
Class	4.1
Packing group	III
Danger label(s)	4.1

Special provisions (SP)	223
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 kg

EmS	F-G, S-G
Stowage category	A
Segregation group	7 - Heavy metals and their salts 15 - Powdered metals

• International Civil Aviation Organization (ICAO-IATA/DGR)

UN number	3089
Proper shipping name	Metal powder, flammable, n.o.s.
Particulars in the shipper's declaration	UN3089, Metal powder, flammable, n.o.s., 4.1, III
Class	4.1
Packing group	III
Danger label(s)	4.1

Special provisions (SP)	A3
Excepted quantities (EQ)	E1
Limited quantities (LQ)	10 kg

SECTION 15: Regulatory information

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

Relevant provisions of the European Union (EU)

• Regulation 649/2012/EU concerning the export and import of hazardous chemicals (PIC)
Not listed.

• Regulation 1005/2009/EC on substances that deplete the ozone layer (ODS)
Not listed.

• Regulation 850/2004/EC on persistent organic pollutants (POP)
Not listed.

• Restrictions according to REACH, Annex XVII

Name of substance	Wt%	Type of registration	No
Iron	100	1907/2006/EC annex XVII	3
Iron	100	1907/2006/EC annex XVII	40

• List of substances subject to authorisation (REACH, Annex XIV)
not listed

Directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS) - Annex II

not listed

Regulation 166/2006/EC concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

not listed

Directive 2000/60/EC establishing a framework for Community action in the field of water policy (WFD)

not listed

National inventories

Substance is listed in the following national inventories:

- EINECS/ELINCS/NLP (Europe)
- DSL/NDSL (Canada)
- REACH (Europe)
- Toxic Substance Control Act (TSCA)

15.2 Chemical Safety Assessment

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

SECTION 16: Other information

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
ADN	Accord européen relatif au transport international des marchandises dangereuses par voies de navigation intérieures (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
ADR	Accord européen relatif au transport international des marchandises dangereuses par route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
CLP	Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
CMR	Carcinogenic, Mutagenic or toxic for Reproduction
DGR	Dangerous Goods Regulations (see IATA/DGR)
DMEL	Derived Minimal Effect Level
DNEL	Derived No-Effect Level
EH40/2005	EH40/2005 Workplace exposure limits (http://www.nationalarchives.gov.uk/doc/open-government-licence/)
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
EmS	Emergency Schedule
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
MARPOL	International Convention for the Prevention of Pollution from Ships (abbr. of "Marine Pollutant")
NLP	No-Longer Polymer

Abbr.	Descriptions of used abbreviations
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
STEL	short-term exposure limit
TWA	time-weighted average
vPvB	very Persistent and very Bioaccumulative
WEL	workplace exposure limit

Key literature references and sources for data

- Regulation (EC) No. 1907/2006 (REACH), amended by 2015/830/EU
- Regulation (EC) No. 1272/2008 (CLP, EU GHS)
- Dangerous Goods Regulations (DGR) for the air transport (IATA)
- International Maritime Dangerous Goods Code (IMDG)

List of relevant phrases (code and full text as stated in chapter 2 and 3)

Code	Text
H228	flammable solid
H251	self-heating: may catch fire

Disclaimer

The above information describes exclusively the safety requirements of the product and is based on our present-day knowledge. The information is intended to give you advice about the safe handling of the product named in this safety data sheet, for storage, processing, transport and disposal. The information cannot be transferred to other products. In the case of mixing the product with other products or in the case of processing, the information on this safety data sheet is not necessarily valid for the new made-up material.