

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 18.03.2019

Version 6.2

**SECTION 1. Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Catalogue No.	103861
Product name	Iron(II) chloride tetrahydrate for analysis EMSURE®
REACH Registration Number	01-2119498060-41-XXXX
CAS-No.	13478-10-9

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

Identified uses	Reagent for analysis For additional information on uses please refer to the Merck Chemicals portal ( <a href="http://www.merckgroup.com">www.merckgroup.com</a> ).
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**1.3 Details of the supplier of the safety data sheet**

Company	Merck KGaA * 64271 Darmstadt * Germany * Phone: +49 6151 72-0
Responsible Department	LS-QHC * e-mail: <a href="mailto:prodsafe@merckgroup.com">prodsafe@merckgroup.com</a>

**1.4 Emergency telephone number** **Please contact the regional company representation in your country.****SECTION 2. Hazards identification****2.1 Classification of the substance or mixture**  
**Classification (REGULATION (EC) No 1272/2008)**

Corrosive to metals, Category 1, H290  
Acute toxicity, Category 4, Oral, H302  
Serious eye damage, Category 1, H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.  
Product name

103861  
Iron(II) chloride tetrahydrate for analysis EMSURE®

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## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H290 May be corrosive to metals.  
H302 Harmful if swallowed.  
H318 Causes serious eye damage.

*Precautionary statements*

Prevention

P280 Wear eye protection.

Response

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.  
Remove contact lenses, if present and easy to do. Continue rinsing.  
P313 Get medical advice/ attention.

### Reduced labelling (≤125 ml)

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H318 Causes serious eye damage.

*Precautionary statements*

P280 Wear eye protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P313 Get medical advice/ attention.

Contains: iron dichloride tetrahydrate

CAS-No. 13478-10-9

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Page 2 of 12

The life science business of Merck operates as MilliporeSigma in the US and Canada

**MERCK**

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

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Formula  $\text{FeCl}_2 \cdot 4 \text{H}_2\text{O}$   $\text{Cl}_2\text{Fe} \cdot 4 \text{H}_2\text{O}$  (Hill)  
EC-No. 231-843-4  
Molar mass 198,81 g/mol

## Hazardous components (REGULATION (EC) No 1272/2008)

*Chemical name (Concentration)*

CAS-No. Registration Classification  
number

iron dichloride tetrahydrate ( $\geq 80\%$  -  $\leq 100\%$ )

13478-10-9 01-2119498060-  
41-XXXX Corrosive to metals, Category 1, H290  
Acute toxicity, Category 4, H302  
Serious eye damage, Category 1, H318

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 3.2 Mixture

Not applicable

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

After inhalation: fresh air.

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

After eye contact: rinse out with plenty of water. Immediately call in ophthalmologist. Remove contact lenses.

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

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

The following applies to soluble iron compounds: nausea and vomiting after swallowing. The absorption of large quantities is followed by cardiovascular disorders. Toxic effect on liver and kidneys.

Risk of serious damage to eyes.

Irritation and corrosion

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

Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

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## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

*Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

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## *Unsuitable extinguishing media*

For this substance/mixture no limitations of extinguishing agents are given.

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

Not combustible.

Ambient fire may liberate hazardous vapours.

Fire may cause evolution of:

Hydrogen chloride gas

### **5.3 Advice for firefighters**

#### *Special protective equipment for firefighters*

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

#### *Further information*

Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6. Accidental release measures**

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

Advice for non-emergency personnel: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders:

Protective equipment see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains.

### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

### **6.4 Reference to other sections**

Indications about waste treatment see section 13.

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## **SECTION 7. Handling and storage**

### **7.1 Precautions for safe handling**

#### *Advice on safe handling*

Observe label precautions.

#### *Hygiene measures*

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

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

#### *Requirements for storage areas and containers*

No metal containers.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

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*Storage conditions*  
Tightly closed. Dry.

Recommended storage temperature see product label.

### 7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.

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## SECTION 8. Exposure controls/personal protection

### 8.1 Control parameters

### 8.2 Exposure controls

#### Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

#### Individual protection measures

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

#### *Eye/face protection*

Tightly fitting safety goggles

#### *Hand protection*

full contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	480 min

splash contact:

Glove material:	Nitrile rubber
Glove thickness:	0,11 mm
Break through time:	480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

#### *Other protective equipment*

protective clothing

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

---

## *Respiratory protection*

required when dusts are generated.

Recommended Filter type: Filter B-(P2)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

## **Environmental exposure controls**

Do not let product enter drains.

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## **SECTION 9. Physical and chemical properties**

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

Form	solid
Colour	light green
Odour	odourless
Odour Threshold	Not applicable
pH	2,5 at 100 g/l 20 °C
Melting point	105 - 110 °C Elimination of water of crystallisation
Boiling point	No information available.
Flash point	does not flash
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapour pressure	No information available.
Relative vapour density	No information available.
Density	1,93 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

---

Water solubility	ca.1.600 g/l at 10 °C
Partition coefficient: n-octanol/water	Not applicable for inorganic substances
Auto-ignition temperature	No information available.
Decomposition temperature	ca.315 °C (anhydrous substance)
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

Ignition temperature	not combustible
Bulk density	ca.900 kg/m <sup>3</sup>
Corrosion	May be corrosive to metals.

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

See section 10.3

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Violent reactions possible with:  
Alkali metals

### 10.4 Conditions to avoid

no information available

### 10.5 Incompatible materials

Metals

### 10.6 Hazardous decomposition products

in the event of fire: See section 5.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### *Acute oral toxicity*

LD50 Rat: 500 mg/kg  
OECD Test Guideline 423

(anhydrous substance)

#### *Acute inhalation toxicity*

Symptoms: Possible damages: , mucosal irritations

#### *Acute dermal toxicity*

LD50 Rat: > 2.000 mg/kg  
OECD Test Guideline 402  
(anhydrous substance)

#### *Skin irritation*

Rabbit  
Result: No skin irritation  
OECD Test Guideline 404

(anhydrous substance)

#### *Eye irritation*

Rabbit  
Result: Irreversible effects on the eye  
OECD Test Guideline 405

(anhydrous substance)  
Causes serious eye damage.

#### *Sensitisation*

This information is not available.

#### *Germ cell mutagenicity*

#### *Genotoxicity in vivo*

In vivo micronucleus test  
Mouse  
male  
Intraperitoneal injection  
Bone marrow  
Result: negative  
Method: OECD Test Guideline 474

(anhydrous substance)

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

---

## *Genotoxicity in vitro*

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

(anhydrous substance)

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

## *Specific target organ toxicity - single exposure*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

This information is not available.

## *Aspiration hazard*

This information is not available.

### **11.2 Further information**

The following applies to soluble iron compounds: nausea and vomiting after swallowing. The absorption of large quantities is followed by cardiovascular disorders. Toxic effect on liver and kidneys.

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

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## **SECTION 12. Ecological information**

### **12.1 Toxicity**

No information available.

### **12.2 Persistence and degradability**

#### *Biodegradability*

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

### **12.3 Bioaccumulative potential**

#### *Partition coefficient: n-octanol/water*

Not applicable for inorganic substances

### **12.4 Mobility in soil**

No information available.

### **12.5 Results of PBT and vPvB assessment**

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

### **12.6 Other adverse effects**

Discharge into the environment must be avoided.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

---

## SECTION 13. Disposal considerations

### *Waste treatment methods*

See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14. Transport information

### Land transport (ADR/RID)

**14.1 - 14.6** Not classified as dangerous in the meaning of transport regulations.

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

**14.1 - 14.6** Not classified as dangerous in the meaning of transport regulations.

### Sea transport (IMDG)

**14.1 - 14.6** Not classified as dangerous in the meaning of transport regulations.

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not relevant

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## SECTION 15. Regulatory information

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

#### *EU regulations*

Major Accident Hazard SEVESO III  
Legislation Not applicable

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Regulation (EC) No 1005/2009 on substances not regulated that deplete the ozone layer

Regulation (EC) No 850/2004 of the not regulated European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

---

Substances of very high concern (SVHC)

This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1\%$  (w/w).

*National legislation*

Storage class 10 - 13

## 15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

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## SECTION 16. Other information

### Full text of H-Statements referred to under sections 2 and 3.

H290 May be corrosive to metals.  
H302 Harmful if swallowed.  
H318 Causes serious eye damage.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H290 May be corrosive to metals.  
H302 Harmful if swallowed.  
H318 Causes serious eye damage.

*Precautionary statements*

Prevention

P280 Wear eye protection.

Response

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing.

P313 Get medical advice/ attention.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 103861  
Product name Iron(II) chloride tetrahydrate for analysis EMSURE®

---

Contains: iron dichloride tetrahydrate

## **Key or legend to abbreviations and acronyms used in the safety data sheet**

Used abbreviations and acronyms can be looked up at [www.wikipedia.org](http://www.wikipedia.org).

## **Regional representation**

This information is given on the authorised Safety Data Sheet for your country.

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*

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