

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 08.12.2017

Version 7.0

---

## SECTION 1. Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

REACH Registration Number A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

CAS-No. 10294-42-5

### 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 ([www.merckgroup.com](http://www.merckgroup.com)).

### 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: [prodsafe@merckgroup.com](mailto:prodsafe@merckgroup.com)

1.4 Emergency telephone number Please contact the regional company representation in your country.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

---

## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008)**

Skin corrosion, Category 1B, H314

Acute aquatic toxicity, Category 1, H400

Chronic aquatic toxicity, Category 1, H410

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

### 2.2 Label elements

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

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H314 Causes severe skin burns and eye damage.

H410 Very toxic to aquatic life with long lasting effects.

*Precautionary statements*

Prevention

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

## Reduced labelling (≤125 ml)

### Hazard pictograms



### Signal word

Danger

### Hazard statements

H314 Causes severe skin burns and eye damage.

### Precautionary statements

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Contains: Cerium(IV) sulphate tetrahydrate

CAS-No. 10294-42-5

## 2.3 Other hazards

None known.

---

## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	$\text{Ce}(\text{SO}_4)_2 \cdot 4 \text{H}_2\text{O}$	$\text{CeO}_8\text{S}_2 \cdot 4 \text{H}_2\text{O}$ (Hill)
EC-No.	237-029-5	
Molar mass	404,30 g/mol	

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

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

*Chemical name (Concentration)*

CAS-No.            Registration number    Classification

Cerium(IV) sulphate tetrahydrate ( $\geq 80\%$  -  $\leq 100\%$ )

10294-42-5        \*)

Skin corrosion, Category 1B, H314

Acute aquatic toxicity, Category 1, H400

Chronic aquatic toxicity, Category 1, H410

\*) A registration number is not available for this substance as the substance or its use are exempted from registration according to Article 2 REACH Regulation (EC) No 1907/2006, the annual tonnage does not require a registration or the registration is envisaged for a later registration deadline.

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

## 3.2 Mixture

Not applicable

---

## SECTION 4. First aid measures

### 4.1 Description of first aid measures

*General advice*

First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

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

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

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

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

Irritation and corrosion, Cough, Shortness of breath

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

Risk of blindness!

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

No information available.

---

## SECTION 5. Firefighting measures

### 5.1 Extinguishing media

#### *Suitable extinguishing media*

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

#### *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:

Sulphur oxides

### 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.

---

## 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.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

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.

---

## SECTION 7. Handling and storage

### 7.1 Precautions for safe handling

#### *Advice on safe handling*

Observe label precautions.

#### *Hygiene measures*

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

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

#### *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.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

---

## 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).

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

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*

Acid-resistant protective clothing

### *Respiratory protection*

required when dusts are generated.

Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

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.

---

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

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

Form	solid
Colour	orange
Odour	odourless
Odour Threshold	Not applicable
pH	ca. 0,5 at 207 g/l 20 °C



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	102274
Product name	Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

Melting point	200 °C at 1.013 hPa Method: OECD Test Guideline 102 Decomposes without melting., Elimination of water of crystallisation
Boiling point/boiling range	decomposition below boiling point
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable. Flammability (solids)
Lower explosion limit	No information available.
Upper explosion limit	No information available.
Vapour pressure	< 1 Pa at 50 °C Method: OECD Test Guideline 104
Relative vapour density	No information available.
Density	3,24 g/cm <sup>3</sup> at 20 °C Method: OECD Test Guideline 109
Relative density	No information available.
Water solubility	ca.207 g/l at 20 °C Method: OECD Test Guideline 105

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	102274
Product name	Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

Partition coefficient: n-octanol/water	Not applicable for inorganic substances
Auto-ignition temperature	> 400 °C at 1.013 hPa Method: Relative self-ignition temperature for solids
Decomposition temperature	> 350 °C
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

Bulk density	ca.650 - 850 kg/m <sup>3</sup>
Particle size	Mean particle size 210,8 µm Method: OECD Test Guideline 110

---

## 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:  
  
strong reducing agents

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

## 10.4 Conditions to avoid

no information available

## 10.5 Incompatible materials

no information available

## 10.6 Hazardous decomposition products

in the event of fire: See section 5.

---

## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

#### *Acute oral toxicity*

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

#### *Acute inhalation toxicity*

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:., damage of respiratory tract

#### *Acute dermal toxicity*

This information is not available.

#### *Skin irritation*

Causes burns.

#### *Eye irritation*

Causes serious eye damage.

Risk of blindness!

#### *Sensitisation*

This information is not available.

#### *Germ cell mutagenicity*

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

## *Genotoxicity in vitro*

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

## *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

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

---

## SECTION 12. Ecological information

### 12.1 Toxicity

#### *Toxicity to daphnia and other aquatic invertebrates*

static test EC50 Daphnia magna (Water flea): 1,19 mg/l; 48 h

Analytical monitoring: yes

OECD Test Guideline 202

#### *Toxicity to algae*

static test ErC50 Pseudokirchneriella subcapitata (green algae): 0,658 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

static test NOEC *Pseudokirchneriella subcapitata* (green algae): 0,555 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

## 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

### *Surface tension*

71,1 mN/m

at 20 °C

Method: OECD Test Guideline 115

### *Additional ecological information*

Biological effects:

Harmful effect due to pH shift.

Discharge into the environment must be avoided.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate 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.

---

## SECTION 14. Transport information

### Land transport (ADR/RID)

14.1 UN number	UN 3260
14.2 Proper shipping name	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (CERIUM(IV)SULFATE TETRAHYDRATE)
14.3 Class	8
14.4 Packing group	II
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	yes
Tunnel restriction code	E

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

14.1 UN number	UN 3260
14.2 Proper shipping name	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (CERIUM(IV)SULFATE TETRAHYDRATE)
14.3 Class	8
14.4 Packing group	II
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	no

### Sea transport (IMDG)

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	102274
Product name	Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

14.1 UN number	UN 3260
14.2 Proper shipping name	CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (CERIUM(IV)SULFATE TETRAHYDRATE)
14.3 Class	8
14.4 Packing group	II
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	yes
EmS	F-A S-B
14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	Not relevant

---

## 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	ENVIRONMENTAL HAZARDS E1 Quantity 1: 100 t Quantity 2: 200 t
Occupational restrictions	Take note of Dir 94/33/EC on the protection of young people at work.

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

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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate 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 8B

## 15.2 Chemical safety assessment

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

---

## SECTION 16. Other information

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

H314 Causes severe skin burns and eye damage.

H400 Very toxic to aquatic life.

H410 Very toxic to aquatic life with long lasting effects.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H314 Causes severe skin burns and eye damage.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 102274

Product name Cerium(IV) sulfate tetrahydrate for analysis EMSURE®

---

H410 Very toxic to aquatic life with long lasting effects.

## *Precautionary statements*

### Prevention

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

### Response

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

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

P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

Contains: Cerium(IV) sulphate 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.

---

*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.*