

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 27.08.2018

Version 10.3

---

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

Catalogue No. 101192

Product name di-Ammonium oxalate monohydrate for analysis EMSURE®  
ACS,ISO,Reag. Ph Eur

REACH Registration Number 01-2120757936-37-XXXX

CAS-No. 6009-70-7

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

Identified uses Reagent for analysis, Chemical production  
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.

---

**SECTION 2. Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Acute toxicity, Category 4, Oral, H302  
Acute toxicity, Category 4, Dermal, H312  
Eye irritation, Category 2, H319

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. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

## 2.2 Label elements

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

#### *Hazard pictograms*



#### *Signal word*

Warning

#### *Hazard statements*

H302 + H312 Harmful if swallowed or in contact with skin.

H319 Causes serious eye irritation.

#### *Precautionary statements*

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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

#### **Reduced labelling (≤125 ml)**

#### *Hazard pictograms*



#### *Signal word*

Warning

*Index-No.* 607-007-00-3

## 2.3 Other hazards

None known.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	(NH <sub>4</sub> ) <sub>2</sub> C <sub>2</sub> O <sub>4</sub> * H <sub>2</sub> O	C <sub>2</sub> H <sub>8</sub> N <sub>2</sub> O <sub>4</sub> * H <sub>2</sub> O (Hill)
Index-No.	607-007-00-3	
EC-No.	214-202-3	
Molar mass	142,11 g/mol	

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

*Chemical name (Concentration)*

CAS-No.	Registration number	Classification
di-Ammonium oxalate monohydrate (>= 80 % - <= 100 % )		

6009-70-7	01-2120757936-37-XXXX	Acute toxicity, Category 4, H302 Acute toxicity, Category 4, H312 Eye irritation, Category 2, H319
-----------	-----------------------	--

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

After inhalation: fresh air.

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

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

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

---

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	101192
Product name	di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag. Ph Eur

---

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

The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large quantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.

The following applies to oxalates in general: nausea and vomiting after swallowing. Mucosal irritations, coughing, and dyspnoea after inhalation. Systemic effect: drop in the blood calcium level, toxic effect on kidneys, cardiovascular disorders.

agitation, spasms, Nausea, Vomiting, collapse, Circulatory collapse, Headache  
irritant effects

## 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*

Water, Foam, Carbon dioxide (CO<sub>2</sub>), Dry powder

*Unsuitable extinguishing media*

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

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

Combustible.

Development of hazardous combustion gases or vapours possible in the event of fire.

Fire may cause evolution of:

nitrogen 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.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	101192
Product name	di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag. Ph Eur

---

## *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.

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*

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

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.

---

## 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*

Safety glasses

#### *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

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

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

#### *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	white
Odour	odourless
Odour Threshold	Not applicable

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

pH 6,5  
at 41,8 g/l  
20 °C

Melting point > 123 °C  
Method: OECD Test Guideline 102  
Elimination of water of crystallisation

Boiling point No information available.

Flash point No information available.

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 hPa  
at 20 °C  
Method: OECD Test Guideline 104

Relative vapour density No information available.

Density 1,5 g/cm<sup>3</sup>  
at 20 °C  
Method: OECD Test Guideline 109

Relative density No information available.



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	101192
Product name	di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag. Ph Eur

---

Water solubility	41,8 g/l at 20 °C Method: OECD Test Guideline 105
Partition coefficient: n-octanol/water	log Pow: < -4,8 (20 °C) Bioaccumulation is not expected. (own results)
Auto-ignition temperature	No information available.
Decomposition temperature	ca.123 °C GLP: yes Elimination of water of crystallisation
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

Bulk density	ca.480 kg/m <sup>3</sup>
Particle size	Mean particle size 172,8 µm Method: OECD Test Guideline 110

---

## SECTION 10. Stability and reactivity

### 10.1 Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

### 10.2 Chemical stability

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

releases water of crystallisation when heated.

## 10.3 Possibility of hazardous reactions

Risk of explosion with:

sodium hypochlorite

Violent reactions possible with:

Oxidizing agents, Strong acids

## 10.4 Conditions to avoid

Temperatures above melting point.

## 10.5 Incompatible materials

Iron, Mild steel, Lead

## 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*

LD50 Rat: 375 mg/kg

(Lit.) The value is given in analogy to the following substances: Oxalic acid

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

*Acute inhalation toxicity*

Symptoms: Possible damages:, mucosal irritations

*Acute dermal toxicity*

Acute toxicity estimate : 1.100,1 mg/kg

Expert judgement

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

## *Skin irritation*

In vitro study

Result: negative

OECD Test Guideline 439

## *Eye irritation*

In vitro study

Result: positive

OECD Test Guideline 492

In vitro study

Result: non-corrosive

OECD Test Guideline 437

Causes serious eye irritation.

## *Sensitisation*

Local lymph node assay (LLNA) Mouse

Result: negative

Method: OECD Test Guideline 429

## *Germ cell mutagenicity*

### *Genotoxicity in vitro*

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

The value is given in analogy to the following substances: Oxalic acid

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

### *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

Systemic effects:

After absorption:

Headache, agitation, spasms, Circulatory collapse, collapse

Damage to:

Kidney

The following applies to oxalates in general: nausea and vomiting after swallowing. Mucosal irritations, coughing, and dyspnoea after inhalation. Systemic effect: drop in the blood calcium level, toxic effect on kidneys, cardiovascular disorders.

The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large quantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.

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*

semi-static test EC50 Daphnia magna (Water flea): > 100 mg/l; 48 h

Analytical monitoring: yes

OECD Test Guideline 202

#### *Toxicity to algae*

static test ErC50 Pseudokirchneriella subcapitata (green algae): > 78 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

static test NOEC *Pseudokirchneriella subcapitata* (green algae): 78 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

## 12.2 Persistence and degradability

*Biodegradability*

89 %; 20 d; aerobic

Directive 67/548/EEC, Annex V, C.5

The value is given in analogy to the following substances:

Readily biodegradable Oxalic acid

## 12.3 Bioaccumulative potential

*Partition coefficient: n-octanol/water*

log Pow: < -4,8 (20 °C)

Bioaccumulation is not expected. (own results)

## 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

*Additional ecological information*

Discharge into the environment must be avoided.

---

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

**Inland waterway transport (ADN)**

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

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

---

## 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 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. 101192  
Product name di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag.  
Ph Eur

---

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.

---

## SECTION 16. Other information

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

H302 Harmful if swallowed.  
H312 Harmful in contact with skin.  
H319 Causes serious eye irritation.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H302 + H312 Harmful if swallowed or in contact with skin.

H319 Causes serious eye irritation.

---

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.	101192
Product name	di-Ammonium oxalate monohydrate for analysis EMSURE® ACS,ISO,Reag. Ph Eur

---

## *Precautionary statements*

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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

## **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.*