

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 20.07.2018

Version 6.10

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

### 1.1 Product identifier

Catalogue No.	106564
Product name	Sodium perchlorate monohydrate for analysis EMSURE®
REACH Registration Number	01-2119540521-50-XXXX
CAS-No.	7791-07-3

### 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> ).

### 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.
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## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Oxidizing solid, Category 1, H271

Acute toxicity, Category 4, Oral, H302

Eye irritation, Category 2, H319

Specific target organ toxicity - repeated exposure, Category 2, Thyroid, H373

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

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## 2.2 Label elements

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

#### *Hazard pictograms*



#### *Signal word*

Danger

#### *Hazard statements*

H271 May cause fire or explosion; strong oxidizer.

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H373 May cause damage to organs (Thyroid) through prolonged or repeated exposure.

#### *Precautionary statements*

##### Prevention

P210 Keep away from heat.

P221 Take any precaution to avoid mixing with combustibles, heavy-metal compounds, acids and alkalis.

##### 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.

P314 Get medical advice/ attention if you feel unwell.

#### **Reduced labelling (≤125 ml)**

##### *Hazard pictograms*



##### *Signal word*

Danger

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## *Hazard statements*

H271 May cause fire or explosion; strong oxidizer.

## *Precautionary statements*

P210 Keep away from heat.

*Index-No.* 017-010-00-6

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	NaClO <sub>4</sub> *H <sub>2</sub> O	ClNaO <sub>4</sub> * H <sub>2</sub> O (Hill)
Index-No.	017-010-00-6	
EC-No.	231-511-9	
Molar mass	140,46 g/mol	

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

#### *Chemical name (Concentration)*

CAS-No.	Registration number	Classification
Sodium perchlorate monohydrate (>= 80 % - <= 100 % )		

7791-07-3	01-2119540521-50-XXXX	Oxidizing solid, Category 1, H271 Acute toxicity, Category 4, H302 Eye irritation, Category 2, H319 Specific target organ toxicity - repeated exposure, Category 2, H373
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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. Call in physician.

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.

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

Shortness of breath, muscular weakness  
irritant effects

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

No information available.

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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.

*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.

Explosive decomposition possible on heating.

Has a fire-promoting effect due to release of oxygen.

Ambient fire may liberate hazardous vapours.

Fire may cause evolution of:

Hydrogen chloride gas

### 5.3 Advice for firefighters

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## *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.

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## 7.2 Conditions for safe storage, including any incompatibilities

### *Storage conditions*

Dry.

Tightly closed. Separately or together with other oxidising substances only and away from sources of ignition and heat. Because of their oxidation potential these products can raise the burning rate of combustible substances substantially or ignite combustible substances on contact with them.

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*

Safety glasses

#### *Hand protection*

full contact:

Glove material:

Nitrile rubber

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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

## *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.

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

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

Form crystals

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Colour colourless

Odour odourless

Odour Threshold Not applicable

pH 4,5 - 7,0  
at 50 g/l  
25 °C

Melting point 130 °C

Boiling point No information available.

Flash point No information available.

Evaporation rate No information available.

Flammability (solid, gas) No information available.

Lower explosion limit No information available.

Upper explosion limit No information available.

Vapour pressure No information available.

Relative vapour density No information available.

Density 2,02 g/cm<sup>3</sup>  
at 20 °C

Relative density No information available.



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Water solubility	2.090 g/l at 15 °C
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Partition coefficient: n-octanol/water	Not applicable for inorganic substances
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Auto-ignition temperature	No information available.
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Decomposition temperature	ca.482 °C  > 130 °C Elimination of water of crystallisation
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Viscosity, dynamic	No information available.
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Explosive properties	Not classified as explosive.
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Oxidizing properties	The substance or mixture is classified as oxidizing with the category 1.
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## 9.2 Other data

Bulk density	900 kg/m <sup>3</sup>
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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

strong oxidising agent

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapours with:

Light metals, Organic Substances, Metals, Alcohols, Fluorine, Halogenated hydrocarbon, semimetallic oxides, Polyvinylchloride, sulfur, acids

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Violent reactions possible with:

Cyanides

Risk of explosion with:

ammonium compounds, Reducing agents, magnesium, Powdered metals, combustible substances

## 10.4 Conditions to avoid

Strong heating (decomposition).

Concentration/ evaporation.

## 10.5 Incompatible materials

Iron, Mild steel

## 10.6 Hazardous decomposition products

in the event of fire: See section 5.

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## SECTION 11. Toxicological information

### 11.1 Information on toxicological effects

*Acute oral toxicity*

Acute toxicity estimate: 500,1 mg/kg

Expert judgement

*Acute inhalation toxicity*

Symptoms: Shortness of breath, Irritation symptoms in the respiratory tract.

*Acute dermal toxicity*

LD50 Rat: > 2.000 mg/kg

OECD Test Guideline 402

The value is given in analogy to the following substances: Sodium perchlorate

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## *Skin irritation*

Rabbit

Result: slight irritation

OECD Test Guideline 404

The value is given in analogy to the following substances: Sodium perchlorate

## *Eye irritation*

Rabbit

Result: Irritations

OECD Test Guideline 405

The value is given in analogy to the following substances: Sodium perchlorate

Causes serious eye irritation.

## *Sensitisation*

Local lymph node assay (LLNA) Mouse

Result: negative

Method: OECD Test Guideline 429

The value is given in analogy to the following substances: Sodium perchlorate

## *Germ cell mutagenicity*

### *Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

The value is given in analogy to the following substances: Sodium perchlorate

Mutagenicity (mammal cell test): chromosome aberration.

Human lymphocytes

Result: negative

Method: OECD Test Guideline 473

The value is given in analogy to the following substances: Sodium perchlorate

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In vitro mammalian cell gene mutation test

Mouse lymphoma test

Result: negative

Method: OECD Test Guideline 476

The value is given in analogy to the following substances: Sodium perchlorate

## *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*

May cause damage to organs through prolonged or repeated exposure.

Target Organs: Thyroid

## *Repeated dose toxicity*

Rat

male and female

Oral

90 d

daily

NOAEL: 1 mg/kg

OECD Test Guideline 408

The value is given in analogy to the following substances:

## *Aspiration hazard*

This information is not available.

## 11.2 Further information

Systemic effects:

muscular weakness

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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

#### *Toxicity to fish*

static test LC50 Danio rerio (zebra fish): > 1.000 mg/l; 96 h

Analytical monitoring: yes

OECD Test Guideline 203

The value is given in analogy to the following substances: Sodium perchlorate

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

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

Analytical monitoring: yes

OECD Test Guideline 202

The value is given in analogy to the following substances: Sodium perchlorate

#### *Toxicity to algae*

static test EC10 Pseudokirchneriella subcapitata (green algae): > 435,7 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

The value is given in analogy to the following substances: Sodium perchlorate

static test EC50 Pseudokirchneriella subcapitata (green algae): > 435,7 mg/l; 72 h

Analytical monitoring: yes

OECD Test Guideline 201

The value is given in analogy to the following substances: Sodium perchlorate

#### *Toxicity to bacteria*

static test EC50 activated sludge: > 700 mg/l; 3 h

Analytical monitoring: yes

ISO 8192

The value is given in analogy to the following substances: Sodium perchlorate

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## *Toxicity to fish (Chronic toxicity)*

semi-static test NOEC Danio rerio (zebra fish): 11,48 mg/l; 84 d

Analytical monitoring: yes

OECD Test Guideline 215

The value is given in analogy to the following substances: Sodium perchlorate

## *Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)*

semi-static test NOEC Ceriodaphnia dubia (water flea): 10 mg/l; 7 d

Analytical monitoring: yes

US-EPA

The value is given in analogy to the following substances: Sodium perchlorate

## **12.2 Persistence and degradability**

### *Biodegradability*

Not applicable for 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.

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## 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 UN number	UN 1502
14.2 Proper shipping name	SODIUM PERCHLORATE
14.3 Class	5.1
14.4 Packing group	II
14.5 Environmentally hazardous	--
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 1502
14.2 Proper shipping name	SODIUM PERCHLORATE
14.3 Class	5.1
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	no

### Sea transport (IMDG)

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14.1 UN number	UN 1502
14.2 Proper shipping name	SODIUM PERCHLORATE
14.3 Class	5.1
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
EmS	F-H S-Q

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	OXIDIZING LIQUIDS AND SOLIDS P8 Quantity 1: 50 t Quantity 2: 200 t

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.
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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	not regulated
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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
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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 5.1A

## 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.

H271	May cause fire or explosion; strong oxidizer.
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H373	May cause damage to organs through prolonged or repeated exposure.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H271 May cause fire or explosion; strong oxidizer.

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H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H373 May cause damage to organs (Thyroid) through prolonged or repeated exposure.

## *Precautionary statements*

### Prevention

P210 Keep away from heat.

P221 Take any precaution to avoid mixing with combustibles, heavy-metal compounds, acids and alkalis.

### 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.

P314 Get medical advice/ attention if you feel unwell.

## **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.*