

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 14.09.2018

Version 6.11

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

Catalogue No.	104944
Product name	Potassium chlorate for analysis EMSURE® ACS, Reag. Ph Eur
REACH Registration Number	01-2119494917-18-XXXX
CAS-No.	3811-04-9

**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.**

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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, Inhalation, H332  
Acute toxicity, Category 4, Oral, H302  
Chronic aquatic toxicity, Category 2, H411

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.

H332 Harmful if inhaled.

H302 Harmful if swallowed.

H411 Toxic to aquatic life with long lasting effects.

#### *Precautionary statements*

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P221 Take any precaution to avoid mixing with combustibles.

P273 Avoid release to the environment.

#### **Reduced labelling (≤125 ml)**

#### *Hazard pictograms*



#### *Signal word*

Danger

#### *Hazard statements*

H271 May cause fire or explosion; strong oxidizer.

#### *Precautionary statements*

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

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*Index-No.* 017-004-00-3

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	KClO <sub>3</sub>	ClKO <sub>3</sub> (Hill)
Index-No.	017-004-00-3	
EC-No.	223-289-7	
Molar mass	122,55 g/mol	

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

*Chemical name (Concentration)*

CAS-No.	Registration number	Classification
Potassium chlorate (<= 100 % )		
3811-04-9	01-2119494917-18-XXXX	Oxidizing solid, Category 1, H271 Acute toxicity, Category 4, H302 Acute toxicity, Category 4, H332 Chronic aquatic toxicity, Category 2, H411

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. If breathing stops: mouth-to-mouth breathing or artificial respiration.

Oxygen if necessary. Immediately call in physician.

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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. 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**

irritant effects, Cough, Shortness of breath, Cyanosis, pain, Diarrhoea, Nausea, Vomiting, death

#### **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.

In the event of decomposition: danger of explosion!

Avoid shock and friction.

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**

##### *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.

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## *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.

Cool closed containers exposed to fire with water spray.

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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.

Work under hood. Do not inhale substance/mixture.

#### *Advice on protection against fire and explosion*

Keep away from open flames, hot surfaces and sources of ignition.

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## *Hygiene measures*

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

## **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

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## *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

## *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	white
Odour	odourless
Odour Threshold	Not applicable
pH	ca. 5,6 at 73 g/l 20 °C
Melting point	356 °C
Boiling point/boiling range	400 °C (decomposition)
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapour pressure	No information available.
Relative vapour density	No information available.

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Density	2,32 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	73 g/l at 20 °C  555 g/l at 100 °C
Partition coefficient: n-octanol/water	No information available.
Auto-ignition temperature	No information available.
Decomposition temperature	> 400 °C
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	The substance or mixture is classified as oxidizing with the category 1.

## 9.2 Other data

Bulk density	ca. 1.200 - 1.400 kg/m <sup>3</sup>
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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

Mechanical sensitivity (friction)  
sensitive to shock

### 10.2 Chemical stability

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

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## 10.3 Possibility of hazardous reactions

Risk of explosion with:

arsenic, resins, charcoal, Powdered metals, sulphuric acid, nitrates, tannin, zinc oxide, Alcohols, organic combustible substances, Sulphides, Hydrocarbons, ammonium compounds, Reducing agents, phosphorus, hydrides, Fluorine, Alkali metals, Cyanides, alkali amides, sulfur, potassium dichromate, powdered aluminium, Germanium, Potassium, copper compounds, powdered magnesium, Nitric acid, Titanium, sugars, Organic Substances

Exothermic reaction with:

Ammonia, calcium silicide, nitrides, phosphides, chromium

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

sulphur dioxide, hydrogen iodide

## 10.4 Conditions to avoid

Avoid shock and friction.

Strong heating (decomposition).

## 10.5 Incompatible materials

no information available

## 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*

LD50 Rat: 1.870 mg/kg

(RTECS)

LDLO human: 1.000 mg/kg

(RTECS)

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## *Acute inhalation toxicity*

Acute toxicity estimate: 1,6 mg/l; dust/mist

Expert judgement

Symptoms: mucosal irritations, Cough, Shortness of breath

## *Acute dermal toxicity*

This information is not available.

## *Skin irritation*

slight irritation

## *Eye irritation*

slight irritation

## *Sensitisation*

This information is not available.

## *Germ cell mutagenicity*

This information is not available.

## *Carcinogenicity*

Did not show carcinogenic effects in animal experiments. (Lit.)

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

Did not show teratogenic effects in animal experiments. (Lit.)

## *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 Safety Data Sheets for catalogue items are available at [www.merckgroup.com](http://www.merckgroup.com)

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After absorption:

After a latency period:

Nausea, Vomiting, pain, Diarrhoea

Systemic effects:

Cyanosis, Methaemoglobinemia, death

Damage to:

Liver, Kidney

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*

LC50 *Leuciscus idus* (Golden orfe): 3.500 mg/l

(Hommel)

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

EC50 *Daphnia magna* (Water flea): 880 mg/l

(Hommel)

EC5 *E. sulcatum*: 817 mg/l

(Hommel) (maximum permissible toxic concentration)

#### *Toxicity to algae*

IC5 *Scenedesmus quadricauda* (Green algae): 0,24 mg/l

(Hommel) (maximum permissible toxic concentration)

### 12.2 Persistence and degradability

#### *Biodegradability*

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

### 12.3 Bioaccumulative potential

No information available.

### 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.

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## 12.6 Other adverse effects

### *Additional ecological information*

Forms toxic mixtures in water, dilution measures notwithstanding.

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 1485
14.2 Proper shipping name	POTASSIUM CHLORATE
14.3 Class	5.1
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 1485
14.2 Proper shipping name	POTASSIUM CHLORATE
14.3 Class	5.1
14.4 Packing group	II
14.5 Environmentally hazardous	yes

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14.6 Special precautions for user no

## Sea transport (IMDG)

14.1 UN number UN 1485  
14.2 Proper shipping name POTASSIUM CHLORATE  
14.3 Class 5.1  
14.4 Packing group II  
14.5 Environmentally hazardous yes  
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  
  
SEVESO III  
ENVIRONMENTAL HAZARDS  
E2  
Quantity 1: 200 t  
Quantity 2: 500 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

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

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.  
H332 Harmful if inhaled.  
H411 Toxic to aquatic life with long lasting effects.

### Training advice

Provide adequate information, instruction and training for operators.

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## Labelling

*Hazard pictograms*



*Signal word*

Danger

*Hazard statements*

H271 May cause fire or explosion; strong oxidizer.

H302 + H332 Harmful if swallowed or if inhaled.

H411 Toxic to aquatic life with long lasting effects.

*Precautionary statements*

Prevention

P210 Keep away from heat.

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

P273 Avoid release to the environment.

## 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.*