



# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 17.04.2014

Version 6.9

## 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®
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.	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.merck-chemicals.com">www.merck-chemicals.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	EQ-RS * 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)

Oxidising 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.

#### Classification (67/548/EEC or 1999/45/EC)

O	Oxidising	R9
Xn	Harmful	R20/22
N	Dangerous for the environment	R51/53

For the full text of the R-phrases 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 oxidiser.

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, hot surfaces, sparks, open flames and other ignition sources. 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 oxidiser.

##### Precautionary statements

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

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	

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

*Chemical Name (Concentration)*

CAS-No. Registration number Classification

Potassium chlorate (<= 100 % )

3811-04-9 \*)

Oxidising solid, Category 1, H271

Acute toxicity, Category 4, H302

Acute toxicity, Category 4, H332

Chronic aquatic toxicity, Category 2, H411

\*) 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.

**Hazardous components (1999/45/EC)**

*Chemical Name (Concentration)*

CAS-No. Classification

Potassium chlorate (<= 100 % )

3811-04-9 O, Oxidising; R9

Xn, Harmful; R20/22

N, Dangerous for the environment; R51/53

For the full text of the R-phrases 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.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist if necessary.

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*

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

*Unsuitable extinguishing media*

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

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

Not combustible.  
Has a fire-promoting effect due to release of oxygen.  
Ambient fire may liberate hazardous vapours.  
In the event of decomposition: danger of explosion!  
Avoid shock and friction.  
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*

Cool closed containers exposed to fire with water spray. 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 substance contact. Avoid inhalation of dusts. 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 empty into 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*

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. 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.

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### 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
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 empty into 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.
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.

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Explosive properties Not classified as explosive.

Oxidizing properties May cause fire or explosion; strong oxidiser.

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) .

### 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)

absorption

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*Acute inhalation toxicity*

Symptoms: mucosal irritations, Cough, Shortness of breath  
absorption

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

Expert judgement

*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

After absorption:

After a latency period:

Nausea, Vomiting, pain, Diarrhoea

Systemic effects:

Cyanosis, Methaemoglobinemia, death

Damage to:

Liver, Kidney

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



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*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.

**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
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

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**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 96/82/EC

Legislation Oxidising  
3

Quantity 1: 50 t

Quantity 2: 200 t

96/82/EC

Dangerous for the environment

9b

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. Take note of Dir 92/85/EEC on the safety and health at work of pregnant workers.

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

Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals 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 oxidiser.  
H302 Harmful if swallowed.  
H332 Harmful if inhaled.  
H411 Toxic to aquatic life with long lasting effects.




**Full text of R-phrases referred to under sections 2 and 3**

R 9 Explosive when mixed with combustible material.  
R20/22 Harmful by inhalation and if swallowed.  
R51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Training advice**




Provide adequate information, instruction and training for operators.

**Labelling (67/548/EEC or 1999/45/EC)**

<i>Symbol(s)</i>	 O  Xn  N	Oxidising Harmful Dangerous for the environment
<i>R-phrases(s)</i>	9-20/22-51/53	Explosive when mixed with combustible material. Harmful by inhalation and if swallowed. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
<i>S-phrases(s)</i>	13-16-27-61	Keep away from food, drink and animal feedingstuffs. Keep away from sources of ignition - No smoking. Take off immediately all contaminated clothing. Avoid release to the environment. Refer to special instructions/ Safety data sheets.

EC-No. 223-289-7 EC Label

**Reduced labelling (≤125 ml)**

<i>Symbol(s)</i>	 O  Xn  N	Oxidising Harmful Dangerous for the environment
<i>R-phrases(s)</i>	20/22	Harmful by inhalation and if swallowed.

**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.*