

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 20.07.2018

Version 6.10

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 (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

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)**

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.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	NaClO ₄ *H ₂ O	ClNaO ₄ * H ₂ 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.

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.

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

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.

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).

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 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 ³ at 20 °C
Relative density	No information available.

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Water solubility 2.090 g/l
at 15 °C

Partition coefficient: n-
octanol/water Not applicable for inorganic substances

Auto-ignition temperature No information available.

Decomposition temperature ca.482 °C

> 130 °C
Elimination of water of crystallisation

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 900 kg/m³

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.

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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Product name Sodium perchlorate monohydrate for analysis EMSURE®

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.

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 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 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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Product name Sodium perchlorate monohydrate for analysis EMSURE®

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

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.

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

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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.

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.

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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.

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.