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

1.1 Product identifier

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

REACH Registration Number This product is a mixture. REACH Registration Number see section 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)

Skin corrosion, Category 1B, H314
Acute aquatic toxicity, Category 1, H400
For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms

Signal word
Danger

Hazard statements
H314 Causes severe skin burns and eye damage.
H400 Very toxic to aquatic life.
EUH031 Contact with acids liberates toxic gas.

Precautionary statements
Prevention
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.
Reduced labelling (≤125 ml)

Hazard pictograms

Signal word
Danger

Hazard statements
H314 Causes severe skin burns and eye damage.

Precautionary statements
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

2.3 Other hazards
None known.

SECTION 3. Composition/information on ingredients

Chemical nature
Aqueous solution

3.1 Substance
Not applicable

3.2 Mixture

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

Chemical name (Concentration)
CAS-No. Registration number Classification
sodium hypochlorite solution (≥ 10% - < 20%)
7681-52-9 *) Skin corrosion, Category 1B, H314

Acute aquatic toxicity, Category 1, H400
SECTION 4. First aid measures

4.1 Description of first aid measures

General advice
First aider needs to protect himself.

After inhalation: fresh air. Call in physician.

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

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

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of perforation). Call a physician immediately. Do not attempt to neutralise.

4.2 Most important symptoms and effects, both acute and delayed

Irritation and corrosion, Cough, Shortness of breath
Risk of blindness!

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.
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.

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: Do not breathe vapours, aerosols. 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 with liquid-absorbent and neutralising material (e.g. Chemizorb® OH⁻, Merck Art. No. 101596). Dispose of properly. Clean up affected area.
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
May decompose forming gaseous products, especially when stored over long periods. Close containers in such a way to enable internal pressure to escape (e.g. excess pressure valve).

No metal containers.

Tightly closed. Protected from light.

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
Tightly fitting safety goggles

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).

Other protective equipment
protective clothing
Respiratory protection
required when vapours/aerosols are generated.
Recommended Filter type: Filter B-(P3)
The entrepeneur 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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Colour</td>
<td>light green</td>
</tr>
<tr>
<td>Odour</td>
<td>of chlorine</td>
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<tr>
<td>Odour Threshold</td>
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<tr>
<td>pH</td>
<td>12 - 13</td>
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<tr>
<td></td>
<td>at 20 °C</td>
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<tr>
<td>Melting point</td>
<td>-20 °C</td>
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<tr>
<td>Boiling point/boiling range</td>
<td>102 °C</td>
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<tr>
<td></td>
<td>at 1.013 hPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No information available.</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

Flammability (solid, gas) No information available.

Lower explosion limit Not applicable

Upper explosion limit Not applicable

Vapour pressure 20 hPa
at 20 °C

Relative vapour density No information available.

Density 1,22 - 1,25 g/cm3
at 20 °C

Relative density No information available.

Water solubility at 20 °C
soluble

Partition coefficient: n-octanol/water No information available.

Auto-ignition temperature No information available.

Decomposition temperature Distillable in an undecomposed state at normal pressure.

Viscosity, dynamic 2,8 mPa.s
at 20 °C

Explosive properties Not classified as explosive.

Oxidizing properties none

9.2 Other data
SECTION 10. Stability and reactivity

10.1 Reactivity
See section 10.3

10.2 Chemical stability
heat-sensitive
Sensitivity to light
Sensitive to air.

10.3 Possibility of hazardous reactions
Risk of explosion with:
acids, hydrochloric acid, nitrous gases, Chlorine, Nitric acid, Cyanides, Oxidizing agents,
Reducing agents, oxalic acid, Organic Substances, Methanol, urea, Acetic anhydride, Ammonia,
Amines, formic acid
Risk of ignition or formation of inflammable gases or vapours with:
arsenic
Generates dangerous gases or fumes in contact with:
Acids

10.4 Conditions to avoid
Avoid shock and friction.

10.5 Incompatible materials
no information available

10.6 Hazardous decomposition products
in the event of fire: See section 5.
SECTION 11. Toxicological information

11.1 Information on toxicological effects

**Mixture**

*Acute oral toxicity*

Symptoms: If ingested, severe burns of the mouth and throat, as well as a danger of perforation of the oesophagus and the stomach.

*Acute inhalation toxicity*

Symptoms: mucosal irritations, Cough, Shortness of breath, Possible damages:, damage of respiratory tract

*Acute dermal toxicity*

This information is not available.

*Skin irritation*

Mixture causes burns.

*Eye irritation*

Mixture causes serious eye damage. Risk of blindness!

*Sensitisation*

This information is not available.

*Germ cell mutagenicity*

This information is not available.

*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.
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

Specific target organ toxicity - repeated exposure
This information is not available.

Aspiration hazard
This information is not available.

11.2 Further information
Other dangerous properties can not be excluded.
Handle in accordance with good industrial hygiene and safety practice.

Components

sodium hypochlorite solution

Acute oral toxicity
LD50 Rat: 8.200 mg/kg
(IUCLID)

Skin irritation
Rabbit
Result: Causes burns.

(External MSDS)

Eye irritation
Rabbit
Result: Causes burns.

(IUCLID)

Sensitisation
Sensitisation test: Guinea pig
Result: negative

(IUCLID)

Human experience
Result: negative

(IUCLID)

Germ cell mutagenicity
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

Genotoxicity in vitro
Ames test
Bacillus subtilis
Result: negative

(IUCLID)

SECTION 12. Ecological information

Mixture

12.1 Toxicity
No information available.

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
Substance(s) in the mixture do(es) not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006; Annex XIII, or a PBT/vPvB assessment was not conducted.

12.6 Other adverse effects
Additional ecological information
 Forms corrosive mixtures with water even if diluted. Harmful effect due to pH shift.

Discharge into the environment must be avoided.

Components

sodium hypochlorite solution

Toxicity to fish
LC50 Pimephales promelas (fathead minnow): 0.08 mg/l; 96 h
(refers to pure substance) (ECOTOX Database)
Toxicity to daphnia and other aquatic invertebrates
EC50 Daphnia magna (Water flea): 0.04 mg/l; 48 h
(refers to pure substance) (ECOTOX Database)

Toxicity to bacteria
EC50 Photobacterium phosphoreum: 100 mg/l; 15 min
(refers to pure substance) (Lit.)

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

M-Factor
10

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 1791
14.2 Proper shipping name HYPOCHLORITE SOLUTION (SODIUM HYPOCHLORITE)
14.3 Class 8
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)
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

Not relevant

Air transport (IATA)
14.1 UN number UN 1791
14.2 Proper shipping name HYPOCHLORITE SOLUTION
14.3 Class 8
14.4 Packing group II
14.5 Environmentally hazardous yes
14.6 Special precautions for user yes
   Not permitted for transport

Sea transport (IMDG)
14.1 UN number UN 1791
14.2 Proper shipping name HYPOCHLORITE SOLUTION (SODIUM HYPOCHLORITE)
14.3 Class 8
14.4 Packing group II
14.5 Environmentally hazardous yes
14.6 Special precautions for user yes
   EmS F-A S-B

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 ENVIRONMENTAL HAZARDS
   E1
   Quantity 1: 100 t
   Quantity 2: 200 t
SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work.

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer 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 ≥ 0.1 % (w/w).

National legislation
Storage class 8B

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.

H314 Causes severe skin burns and eye damage.
H400 Very toxic to aquatic life.

Training advice
Provide adequate information, instruction and training for operators.
SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 105614
Product name Sodium hypochlorite solution (6-14% active chlorine) EMPLURA®

Labelling

Hazard pictograms

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Danger

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H400 Very toxic to aquatic life.
EUH031 Contact with acids liberates toxic gas.

Precautionary statements

Prevention
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P308 + P310 IF exposed or concerned: immediately call a POISON CENTER or doctor/ physician.

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.
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</table>

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.