

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 17.07.2017

Version 7.2

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

Catalogue No. 107209

Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

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

In compliance with the conditions described in the annex to this safety data sheet.

1.3 Details of the supplier of the safety data sheet

Responsible Department LS-QHC * e-mail: prodsafe@merckgroup.com

Regional representation Merck Chemicals Ltd * Boulevard Industrial Park * Padge Road *
Beeston * Nottingham * NG9 2JR * Tel. 01159 430840 *
information@merckchem.co.uk.

1.4 Emergency telephone number +49 (0) 6151 722440

SECTION 2. Hazards identification**2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

Acute toxicity, Category 4, Oral, H302

Serious eye damage, Category 1, H318

Chronic aquatic toxicity, Category 4, H413

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

H302 Harmful if swallowed.

H318 Causes serious eye damage.

H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

Prevention

P273 Avoid release to the environment.

P280 Wear eye protection.

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.

P313 Get medical advice/ attention.

Reduced labelling (≤ 125 ml)

Hazard pictograms



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Signal word

Danger

Hazard statements

H318 Causes serious eye damage.

H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

P280 Wear eye protection.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P313 Get medical advice/ attention.

Contains: Hydrogen Peroxide

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

Hydrogen Peroxide ($\geq 25\%$ - $< 35\%$)

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

| | | |
|-----------|-------------------|--|
| 7722-84-1 | 01-2119485845-22- | |
| | XXXX | Oxidizing liquid, Category 1, H271 |
| | | Acute toxicity, Category 4, H302 |
| | | Acute toxicity, Category 4, H332 |
| | | Skin corrosion, Category 1A, H314 |
| | | Specific target organ toxicity - single exposure, Category 3, H335 |
| | | Chronic aquatic toxicity, Category 3, H412 |

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

SECTION 4. First aid measures

4.1 Description of first aid measures

After inhalation: fresh air.

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. Immediately 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

Dizziness, Unconsciousness, Diarrhoea, Nausea, Vomiting, Headache, Convulsions, muscle twitching, insomnia, shock, Irritation and corrosion, conjunctivitis

Risk of serious damage to eyes.

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.

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

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

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 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 with liquid-absorbent and neutralising material (e.g. Chemisorb® H⁺, Merck Art. No. 101595). 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.

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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

Requirements for storage areas and containers

Close containers in such a way to enable internal pressure to escape (e.g. excess pressure valve).

No metal containers.

Storage conditions

Tightly closed. Protected from light. Do not store near combustible materials.

Recommended storage temperature see product label.

7.3 Specific end use(s)

See exposure scenario in the Annex to this MSDS.

SECTION 8. Exposure controls/personal protection

8.1 Control parameters

Components with workplace control parameters

Components

| Basis | Value | Threshold limits | Remarks |
|-------|-------|------------------|---------|
|-------|-------|------------------|---------|

Hydrogen Peroxide (7722-84-1)

| | | | |
|----------|-----------------------------------|--------------------------------|--|
| EH40 WEL | Short Term Exposure Limit (STEL): | 2 ppm 2.8 mg/m ³ | |
| | Time Weighted Average (TWA): | 1 ppm 1.4 mg/m ³ | |

Derived No Effect Level (DNEL)

Hydrogen Peroxide (7722-84-1)

| | | | |
|--------------------|---------------|------------|---------------------|
| Worker DNEL, acute | Local effects | inhalation | 3 mg/m ³ |
|--------------------|---------------|------------|---------------------|

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| | | | |
|----------------------------|---------------|------------|------------------------|
| Worker DNEL, longterm | Local effects | inhalation | 1.4 mg/m ³ |
| Consumer DNEL, acute | Local effects | inhalation | 1.93 mg/m ³ |
| Consumer DNEL, longterm | Local effects | inhalation | 0.21 mg/m ³ |

Recommended monitoring procedures

Methods for measurement of the workplace atmosphere have to correspond to the requirements of norms DIN EN 482 and DIN EN 689.

Predicted No Effect Concentration (PNEC)

Hydrogen Peroxide (7722-84-1)

| | |
|-----------------------------------|--------------|
| PNEC Fresh water | 0.0126 mg/l |
| PNEC Marine water | 0.0126 mg/l |
| PNEC Aquatic intermittent release | 0.0138 mg/l |
| PNEC Sewage treatment plant | 4.66 mg/l |
| PNEC Fresh water sediment | 0.47 mg/kg |
| PNEC Marine sediment | 0.47 mg/kg |
| PNEC Soil | 0.0023 mg/kg |

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.

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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

Eye/face protection

Tightly fitting safety goggles

Hand protection

full contact:

| | |
|---------------------|---------------|
| Glove material: | natural latex |
| Glove thickness: | 0.6 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 706 Lapren® (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 NO

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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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|-----------------------------|---------------------------|
| Form | liquid |
| Colour | colourless |
| Odour | slight stinging |
| Odour Threshold | No information available. |
| pH | ≤ 3.5 at 20 °C |
| Melting point | -25.7 °C |
| Boiling point/boiling range | 107 °C at 1,013 hPa |
| Flash point | Not applicable |
| 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 | ca. 18 hPa at 20 °C |
| Relative vapour density | No information available. |

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| | |
|--|---|
| Density | 1.11 g/cm ³ at 20 °C |
| Relative density | No information available. |
| Water solubility | at 20 °C completely miscible |
| Partition coefficient: n-octanol/water | log Pow: -1.57 (calculated) Bioaccumulation is not expected. (External MSDS) (refers to pure substance) |
| Auto-ignition temperature | No information available. |
| Decomposition temperature | > 100 °C |
| Viscosity, dynamic | No information available. |
| Explosive properties | Not classified as explosive. |
| Oxidizing properties | Oxidizing potential |

9.2 Other data

none

SECTION 10. Stability and reactivity

10.1 Reactivity

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

10.2 Chemical stability

heat-sensitive

Sensitivity to light

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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

Stabilizer

2,6-Pyridinedicarboxylic acid

10.3 Possibility of hazardous reactions

Risk of explosion with:

Acetaldehyde, Acetone, Activated charcoal, Alcohols, formic acid, Ammonia, combustible substances, vinyl acetate, Organic Substances, Powdered metals, Dust., hydrazine and derivatives, hydrides, Ether, Potassium, anilines, metallic salts, acetic acid, Acetic anhydride, formaldehyde, furfuryl alcohol, oils, sodium, Lithium, lithium aluminium hydride, organic solvents, magnesium, metallic oxides, Methanol, Reducing agents, Oxides of phosphorus

butanol, with, Sulphuric acid

alkali hydroxides, with, Heavy metals

Exothermic reaction with:

alkali hydroxides, antimony sulfide, tin (II) chloride, Sulphides, THIOPHENE, nitric acid (conc.), ethanol, glycerol, Potassium hydroxide, phosphorus, metallic oxides, Sodium hydroxide, Aldehydes, nonmetals, nonmetallic oxides, strong alkalis, Amines, Acids, Oxidizing agents, alkali salts, Alkali metals, Alkaline earth metals, iodides, peroxi compounds, brass, organic nitro compounds

phenol, with, metal catalysts

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

potassium permanganate, Wood/Sawdust

vinyl acetate, with, Catalyst

10.4 Conditions to avoid

Heating.

10.5 Incompatible materials

Metals

10.6 Hazardous decomposition products

no information available

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SECTION 11. Toxicological information

11.1 Information on toxicological effects

Mixture

Acute oral toxicity

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute toxicity estimate: 1,667 mg/kg

Calculation method

Acute inhalation toxicity

Symptoms: Possible damages:, mucosal irritations

Acute toxicity estimate: > 20 mg/l; 4 h ; vapour

Calculation method

Acute dermal toxicity

This information is not available.

Skin irritation

After long-term exposure to the chemical: Causes skin burns.

Eye irritation

conjunctivitis

Mixture causes serious eye damage.

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.

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Teratogenicity

This information is not available.

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

Systemic effects:

Headache, Dizziness, Nausea, Vomiting, Diarrhoea, insomnia, muscle twitching, Convulsions, Unconsciousness, shock

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Components

Hydrogen Peroxide

Acute oral toxicity

Acute toxicity estimate: 500.1 mg/kg

Expert judgement

Acute dermal toxicity

LD50 Rabbit: > 2,000 mg/kg

US-EPA

Repeated dose toxicity

Mouse

male

Oral

90 d

daily

NOAEL: 26 mg/kg

LOAEL: 76 mg/kg

OECD Test Guideline 408

Subchronic toxicity

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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

Rat
male and female
inhalation (dust/mist/fume)
28 d
daily
NOAEL: 0.0029 mg/l
LOAEL: 0.0146 mg/l
OECD Test Guideline 412

Subacute toxicity

Germ cell mutagenicity
Genotoxicity in vivo
In vivo micronucleus test
Mouse
male and female
Intraperitoneal injection
Result: negative
Method: OECD Test Guideline 474

SECTION 12. Ecological information

Mixture

12.1 Toxicity

No information available.

12.2 Persistence and degradability

Biodegradability

Readily biodegradable

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: -1.57

(calculated)

Bioaccumulation is not expected. (External MSDS) (refers to pure substance)

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

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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

Surface tension

ca. 74.12 mN/m

at 20 °C

Additional ecological information

No interference with wastewater treatment plants are to be expected when used properly.

Discharge into the environment must be avoided.

Components

Hydrogen Peroxide

Toxicity to fish

semi-static test LC50 Pimephales promelas (fathead minnow): 16.4 mg/l; 96 h

Analytical monitoring: yes

US-EPA

semi-static test NOEC Pimephales promelas (fathead minnow): 5 mg/l; 96 h

Analytical monitoring: yes

US-EPA

Toxicity to daphnia and other aquatic invertebrates

semi-static test LC50 Daphnia pulex (Water flea): 2.4 mg/l; 48 h

Analytical monitoring: yes

US-EPA

semi-static test NOEC Daphnia pulex (Water flea): 1 mg/l; 48 h

Analytical monitoring: yes

US-EPA

Toxicity to algae

IC50 Pseudokirchneriella subcapitata (green algae): 5.7 mg/l; 72 h

(ECOTOX Database)

Growth rate NOEC Skeletonema costatum (marine diatom): 0.63 mg/l; 72 h

(External MSDS)

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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

Toxicity to bacteria

static test EC50 activated sludge: 466 mg/l; 30 min

Analytical monitoring: yes

OECD Test Guideline 209

static test EC50 activated sludge: > 1,000 mg/l; 3 h

Analytical monitoring: yes

OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

flow-through test NOEC Daphnia magna (Water flea): 0.63 mg/l; 21 d

(ECHA)

Biodegradability

> 99 %; 0.5 h; aerobic

(ECHA)

Readily biodegradable

Substance does not meet the criteria for PBT or vPvB according to Regulation (EC) No 1907/2006, Annex XIII.

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SECTION 13. Disposal considerations

Waste treatment methods

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

Notice Directive on waste 2008/98/EC.

SECTION 14. Transport information

Land transport (ADR/RID)

| | |
|-----------------------------------|-------------------------------------|
| 14.1 UN number | UN 2014 |
| 14.2 Proper shipping name | HYDROGEN PEROXIDE, AQUEOUS SOLUTION |
| 14.3 Class | 5.1 (8) |
| 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 2014 |
| 14.2 Proper shipping name | HYDROGEN PEROXIDE, AQUEOUS SOLUTION |
| 14.3 Class | 5.1 (8) |
| 14.4 Packing group | II |
| 14.5 Environmentally hazardous | -- |

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14.6 Special precautions for user yes
Not permitted for transport

Sea transport (IMDG)

14.1 UN number UN 2014
14.2 Proper shipping name HYDROGEN PEROXIDE, AQUEOUS SOLUTION
14.3 Class 5.1 (8)
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 Not applicable

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 not regulated
deplete the ozone layer

Regulation (EC) No 850/2004 of the European not regulated
Parliament and of the Council of 29 April 2004 on
persistent organic pollutants and amending
Directive 79/117/EEC

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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 5.1B

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. |
| H314 | Causes severe skin burns and eye damage. |
| H318 | Causes serious eye damage. |
| H332 | Harmful if inhaled. |
| H335 | May cause respiratory irritation. |
| H412 | Harmful to aquatic life with long lasting effects. |
| H413 | May cause long lasting harmful effects to aquatic life. |

Training advice

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms



Signal word

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Danger

Hazard statements

H302 Harmful if swallowed.

H318 Causes serious eye damage.

H413 May cause long lasting harmful effects to aquatic life.

Precautionary statements

Prevention

P273 Avoid release to the environment.

P280 Wear eye protection.

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.

P313 Get medical advice/ attention.

Contains: Hydrogen Peroxide

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.

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.

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EXPOSURE SCENARIO 1 (Industrial use)

1. Industrial use Reagent for analysis)

Sectors of end-use

- SU 3* Industrial uses: Uses of substances as such or in preparations at industrial sites
SU 9 Manufacture of fine chemicals
SU 10 Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)

Chemical product category

- PC21* Laboratory chemicals

Process categories

- PROC1* Use in closed process, no likelihood of exposure
PROC2 Use in closed, continuous process with occasional controlled exposure
PROC3 Use in closed batch process (synthesis or formulation)
PROC4 Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
PROC8a Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
PROC8b Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
PROC9 Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 Roller application or brushing
PROC14 Production of preparations or articles by tableting, compression, extrusion, pelletisation
PROC15 Use as laboratory reagent

Environmental Release Categories

- ERC1* Manufacture of substances
ERC2 Formulation of preparations
ERC4 Industrial use of processing aids in processes and products, not becoming part of articles
ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b Industrial use of reactive processing aids

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2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC4, ERC6a, ERC6b

Amount used

Annual amount per site 1010 t
Remarks (refers to pure substance)

Other given operational conditions affecting environmental exposure

Number of emission days per year 360
Emission or Release Factor: Air 0.10 %
Emission or Release Factor: Water 0.50 %
Emission or Release Factor: Soil 0.10 %

Technical conditions and measures / Organizational measures

Air Use of air emission abatement equipments.
Water Biological waste water treatment plant

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant Municipal sewage treatment plant
Flow rate of sewage treatment 2,000 m³/d
plant effluent
Percentage removed from waste 97 %
water

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8b, PROC15

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 70 %.
Physical Form (at time of use) Medium volatile liquid
Process Temperature < 70 °C

Frequency and duration of use

Frequency of use 8 hours/day

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Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with local exhaust ventilation (LEV)

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves (tested to EN374) and eye protection.

2.3 Contributing scenario controlling worker exposure for: PROC4

Product characteristics

| | |
|---|---|
| Concentration of the Substance in Mixture/Article | Covers the percentage of the substance in the product up to 70 %. |
| Physical Form (at time of use) | Medium volatile liquid |
| Process Temperature | < 70 °C |

Frequency and duration of use

Frequency of use 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with LEV and good general ventilation

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves (tested to EN374) and eye protection.

2.4 Contributing scenario controlling worker exposure for: PROC5, PROC8a, PROC9

Product characteristics

| | |
|-----------------------------------|---|
| Concentration of the Substance in | Covers the percentage of the substance in the product up to |
|-----------------------------------|---|

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Product name Hydrogen peroxide 30% (Perhydrol®) for analysis EMSURE® ISO

Mixture/Article 70 %.
Physical Form (at time of use) Medium volatile liquid
Process Temperature < 70 °C

Frequency and duration of use

Frequency of use < 4 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with LEV and enhanced general ventilation

Organisational measures to prevent /limit releases, dispersion and exposure

Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves (tested to EN374) and eye protection.

2.5 Contributing scenario controlling worker exposure for: PROC10, PROC14

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 70 %.
Physical Form (at time of use) Medium volatile liquid
Process Temperature < 70 °C

Frequency and duration of use

Frequency of use 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with LEV and enhanced general ventilation

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves (tested to EN374) and eye protection.

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3. Exposure estimation and reference to its source

Environment

| CS | Use descriptor | Msafe | Compartment | RCR | Exposure Assessment Method |
|-----|----------------|-------|-------------|------|----------------------------|
| 2.1 | ERC1 | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC2 | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC4 | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC6a | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC6b | | Fresh water | 0.61 | EUSES |

Workers

| CS | Use descriptor | Exposure duration, route, effect | RCR | Exposure Assessment Method |
|-----|----------------|----------------------------------|--------|----------------------------|
| 2.2 | PROC1 | longterm, inhalative, systemic | < 0.01 | ECETOC TRA, modified |
| 2.2 | PROC2 | longterm, inhalative, systemic | 0.35 | ECETOC TRA, modified |
| 2.2 | PROC3 | longterm, inhalative, systemic | 0.71 | ECETOC TRA, modified |
| 2.2 | PROC8b | longterm, inhalative, systemic | 0.89 | ECETOC TRA, modified |
| 2.2 | PROC15 | longterm, inhalative, systemic | 0.71 | ECETOC TRA, modified |
| 2.3 | PROC4 | longterm, inhalative, systemic | 0.99 | ECETOC TRA, modified |
| 2.4 | PROC5 | longterm, inhalative, systemic | 0.64 | ECETOC TRA, modified |
| 2.4 | PROC8a | longterm, inhalative, systemic | 0.64 | ECETOC TRA, modified |
| 2.4 | PROC9 | longterm, inhalative, systemic | 0.64 | ECETOC TRA, modified |
| 2.5 | PROC10 | longterm, inhalative, systemic | 0.91 | ECETOC TRA, modified |
| 2.5 | PROC14 | longterm, inhalative, systemic | 0.91 | ECETOC TRA, modified |

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).

For (other) local effects risk management measures are based on qualitative risk characterisation.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical

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safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool SciDeEx® at www.merckmillipore.com/scideex.

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EXPOSURE SCENARIO 2 (Professional use)

1. Professional use Reagent for analysis)

Sectors of end-use

SU 22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Chemical product category

PC 21 Laboratory chemicals

Process categories

PROC 15 Use as laboratory reagent

Environmental Release Categories

ERC 2 Formulation of preparations

ERC 4 Industrial use of processing aids in processes and products, not becoming part of articles

ERC 6a Industrial use resulting in manufacture of another substance (use of intermediates)

ERC 6b Industrial use of reactive processing aids

2. Contributing scenarios: Operational conditions and risk management measures

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4, ERC6a, ERC6b

Amount used

Annual amount per site 1010 t
Remarks (refers to pure substance)

Other given operational conditions affecting environmental exposure

Number of emission days per year 360
Emission or Release Factor: Air 0.10 %
Emission or Release Factor: Water 0.50 %
Emission or Release Factor: Soil 0.10 %

Technical conditions and measures / Organizational measures

Air Use of air emission abatement equipments.
Water Biological waste water treatment plant

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Conditions and measures related to municipal sewage treatment plant

| | |
|--|----------------------------------|
| Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| Flow rate of sewage treatment plant effluent | 2,000 m ³ /d |
| Percentage removed from waste water | 97 % |

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics

| | |
|---|---|
| Concentration of the Substance in Mixture/Article | Covers the percentage of the substance in the product up to 70 %. |
| Physical Form (at time of use) | Medium volatile liquid |
| Process Temperature | < 70 °C |

Frequency and duration of use

| | |
|------------------|-------------|
| Frequency of use | 8 hours/day |
|------------------|-------------|

Other operational conditions affecting workers exposure

| | |
|------------------|--|
| Outdoor / Indoor | Indoor with LEV and good general ventilation |
|------------------|--|

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves (tested to EN374) and eye protection.

3. Exposure estimation and reference to its source

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Environment

| CS | Use descriptor | Msafe | Compartment | RCR | Exposure Assessment Method |
|-----|----------------|-------|-------------|------|----------------------------|
| 2.1 | ERC2 | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC4 | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC6a | | Fresh water | 0.61 | EUSES |
| 2.1 | ERC6b | | Fresh water | 0.61 | EUSES |

Workers

| CS | Use descriptor | Exposure duration, route, effect | RCR | Exposure Assessment Method |
|-----|----------------|----------------------------------|------|----------------------------|
| 2.2 | PROC15 | longterm, inhalative, systemic | 0.99 | ECETOC TRA, modified |

The default parameters and -efficiencies of the applied exposure assessment model were used for the calculation (unless stated differently).

For (other) local effects risk management measures are based on qualitative risk characterisation.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Please refer to the following documents: ECHA Guidance on information requirements and chemical safety assessment Chapter R.12: Use descriptor system; ECHA Guidance for downstream users; ECHA Guidance on information requirements and chemical safety assessment Part D: Exposure Scenario Building, Part E: Risk Characterisation and Part G: Extending the SDS; VCI/Cefic REACH Practical Guides on Exposure Assessment and Communications in the Supply Chain; CEFIC Guidance Specific Environmental Release Categories (SPERCs).

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool SciDeEx® at www.merckmillipore.com/scideex.