

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 31.07.2018

Version 15.5

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

1.1 Product identifier

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

REACH Registration Number 01-2119444314-46-XXXX

CAS-No. 109-99-9

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

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)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Flammable liquid, Category 2, H225

Acute toxicity, Category 4, Oral, H302

Eye irritation, Category 2, H319

Carcinogenicity, Category 2, H351

Specific target organ toxicity - single exposure, Category 3, Respiratory system, H335

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

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

H351 Suspected of causing cancer.

EUH019 May form explosive peroxides.

Precautionary statements

Prevention

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

P240 Ground/bond container and receiving equipment.

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.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

Reduced labelling (≤125 ml)

Hazard pictograms



Signal word

Danger

Hazard statements

H351 Suspected of causing cancer.

Precautionary statements

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

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Index-No. 603-025-00-0

2.3 Other hazards

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	C ₄ H ₈ O	C ₄ H ₈ O (Hill)
Index-No.	603-025-00-0	
EC-No.	203-726-8	
Molar mass	72,11 g/mol	

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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

Chemical name (Concentration)

CAS-No. Registration number Classification

Tetrahydrofuran (>= 50 % - <= 100 %)

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

109-99-9	01-2119444314-46-XXXX	Flammable liquid, Category 2, H225 Acute toxicity, Category 4, H302 Eye irritation, Category 2, H319 Carcinogenicity, Category 2, H351 Specific target organ toxicity - single exposure, Category 3, H335
----------	-----------------------	---

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

3.2 Mixture

Not applicable

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

irritant effects, Cough, Shortness of breath, narcosis, somnolence

4.3 Indication of any immediate medical attention and special treatment needed

No information available.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

SECTION 5. Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media

Water, Foam, Carbon dioxide (CO₂), Dry powder

Unsuitable extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air at ambient temperatures.

Pay attention to flashback.

Development of hazardous combustion gases or vapours possible in the event of fire.

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

Remove container from danger zone and cool with water. 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. Keep away from heat and sources of ignition. 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. Risk of explosion.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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 carefully with liquid-absorbent material (e.g. Chemizorb®). 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

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

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

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Protected from light.

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

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Derived No Effect Level (DNEL)

Worker DNEL, longterm	Local effects	inhalation	150 mg/m ³
Worker DNEL, longterm	Systemic effects	inhalation	150 mg/m ³
Worker DNEL, longterm	Systemic effects	dermal	25 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	inhalation	62 mg/m ³
Consumer DNEL, longterm	Systemic effects	dermal	15 mg/kg Body weight
Consumer DNEL, acute	Local effects	inhalation	150 mg/m ³
Consumer DNEL, acute	Systemic effects	inhalation	150 mg/m ³

Predicted No Effect Concentration (PNEC)

PNEC Fresh water	4,32 mg/l
PNEC Fresh water sediment	23,3 mg/kg
PNEC Marine water	0,432 mg/l
PNEC Marine sediment	2,33 mg/kg
PNEC Sewage treatment plant	4,6 mg/l
PNEC Soil	2,13 mg/kg
PNEC Aquatic intermittent release	21,6 mg/l

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.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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

splash contact:

Glove material: butyl-rubber

Glove thickness: 0,7 mm

Break through time: > 10 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 898 Butoject® (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

Flame retardant antistatic protective clothing.

Respiratory protection

required when vapours/aerosols are generated.

Recommended Filter type: Filter A (acc. to DIN 3181) for vapours of organic compounds

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.

Risk of explosion.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	liquid
Colour	colourless
Odour	ether-like
Odour Threshold	No information available.
pH	7 - 8 at 200 g/l 20 °C
Melting point	-108,5 °C
Boiling point/boiling range	65 - 66 °C at 1.013 hPa
Flash point	-21,5 °C Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1,5 %(V)
Upper explosion limit	12,4 %(V)
Vapour pressure	173 hPa at 20 °C

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Relative vapour density	2,5
Density	0,89 g/cm ³ at 20 °C
Relative density	No information available.
Water solubility	at 20 °C soluble
Partition coefficient: n-octanol/water	log Pow: 0,45 (25 °C) OECD Test Guideline 107 Bioaccumulation is not expected.
Auto-ignition temperature	215 °C Method: DIN 51794
Decomposition temperature	Distillable in an undecomposed state at normal pressure.
Viscosity, dynamic	0,48 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none
Peroxides	May form explosive peroxides.

9.2 Other data

none

SECTION 10. Stability and reactivity

10.1 Reactivity

Vapours may form explosive mixture with air.

Formation of peroxides possible.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

10.2 Chemical stability

Sensitivity to light

Sensitive to air.

Stabilizer

butyl hydroxytoluene (BHT)

10.3 Possibility of hazardous reactions

A risk of explosion and/or of toxic gas formation exists with the following substances:

alkali hydroxides, Bromine, CALCIUM HYDRIDE, hydrides, Potassium, lithium aluminium hydride, thionyl chloride, Oxidizing agents, Oxygen

aminophenol, with, Peroxides

Exothermic reaction with:

Acids, TITANIUM TETRACHLORIDE, halides, peroxi compounds

10.4 Conditions to avoid

Warming.

Distillation (Risk of explosion).

10.5 Incompatible materials

rubber, various plastics, Tin

10.6 Hazardous decomposition products

Peroxides

SECTION 11. Toxicological information

11.1 Information on toxicological effects

Acute oral toxicity

LD50 Rat: 1.650 mg/kg

(ECHA)

Symptoms: Irritation of mucous membranes

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation

Rabbit

Result: Eye irritation

(IUCLID)

Causes serious eye irritation.

Sensitisation

Sensitisation test: Guinea pig

Result: negative

(IUCLID)

Human experience

Result: negative

(IUCLID)

Germ cell mutagenicity

Genotoxicity in vitro

Ames test

Result: negative

(IUCLID)

Carcinogenicity

This information is not available.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Reproductive toxicity

No impairment of reproductive performance suspected. (Lit.)

Teratogenicity

This information is not available.

CMR effects

Carcinogenicity:

Suspected of causing cancer.

Specific target organ toxicity - single exposure

May cause respiratory irritation.

Target Organs: Respiratory system

Specific target organ toxicity - repeated exposure

This information is not available.

Aspiration hazard

This information is not available.

11.2 Further information

In high doses:

somnolence, narcosis

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

SECTION 12. Ecological information

12.1 Toxicity

Toxicity to fish

flow-through test LC50 Pimephales promelas (fathead minnow): 2.160 mg/l; 96 h

OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

static test EC50 Daphnia magna (Water flea): 3.485 mg/l; 48 h

OECD Test Guideline 202

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Toxicity to algae

Cell multiplication inhibition test IC50 *Scenedesmus quadricauda* (Green algae): 3.700 mg/l; 8 d
(maximum permissible toxic concentration)

Toxicity to bacteria

static test IC50 activated sludge: 460 mg/l; 3 h
OECD Test Guideline 209

Toxicity to fish (Chronic toxicity)

flow-through test NOEC *Pimephales promelas* (fathead minnow): 216 mg/l; 33 d

Analytical monitoring: yes
(ECHA)

12.2 Persistence and degradability

Biodegradability

39 %; 28 d; aerobic Biochemical oxygen demand
OECD Test Guideline 301D
Not readily biodegradable.

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 0,45 (25 °C)
OECD Test Guideline 107

Bioaccumulation is not expected.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

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

12.6 Other adverse effects

Discharge into the environment must be avoided.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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 2056
14.2 Proper shipping name	TETRAHYDROFURAN
14.3 Class	3
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	yes
Tunnel restriction code	D/E

Inland waterway transport (ADN)

Not relevant

Air transport (IATA)

14.1 UN number	UN 2056
14.2 Proper shipping name	TETRAHYDROFURAN
14.3 Class	3
14.4 Packing group	II
14.5 Environmentally hazardous	--
14.6 Special precautions for user	no

Sea transport (IMDG)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

14.1 UN number UN 2056
14.2 Proper shipping name TETRAHYDROFURAN
14.3 Class 3
14.4 Packing group II
14.5 Environmentally hazardous --
14.6 Special precautions for user yes
EmS F-E S-D

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 FLAMMABLE LIQUIDS
P5c
Quantity 1: 5.000 t
Quantity 2: 50.000 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

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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 3

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.

H225	Highly flammable liquid and vapour.
H302	Harmful if swallowed.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H351	Suspected of causing cancer.

Training advice

Provide adequate information, instruction and training for operators.

Labelling

Hazard pictograms



Signal word

Danger

Hazard statements

H225 Highly flammable liquid and vapour.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

H302 Harmful if swallowed.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H351 Suspected of causing cancer.
EUH019 May form explosive peroxides.

Precautionary statements

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P240 Ground/bond container and receiving equipment.

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.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

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.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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
PROC15 Use as laboratory reagent

Environmental Release Categories

- ERC1* Manufacture of substances
ERC2 Formulation of preparations
ERC6a Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b Industrial use of reactive processing aids
-

2. Contributing scenarios: Operational conditions and risk management measures

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

2.1 Contributing scenario controlling worker exposure for: PROC1

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 %.

Physical Form (at time of use) High volatile liquid

Frequency and duration of use

Frequency of use 5 days/week
Frequency of use 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor activities

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC4, PROC5, PROC9, PROC10, PROC15

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 %.

Physical Form (at time of use) High volatile liquid

Frequency and duration of use

Frequency of use 5 days/week
Frequency of use 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with local exhaust ventilation (LEV)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374.

2.3 Contributing scenario controlling worker exposure for: PROC8a

Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use)	High volatile liquid

Frequency and duration of use

Frequency of use	5 days/week
Frequency of use	8 hours/day

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 respiratory protection. Effectiveness (of a measure): 90 %

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374.

2.4 Contributing scenario controlling worker exposure for: PROC8b

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 %.
Physical Form (at time of use) High volatile liquid

Frequency and duration of use

Frequency of use 5 days/week
Frequency of use 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with local exhaust ventilation (LEV)

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 97 %)

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC1	longterm, inhalative, local	< 0,001	ECETOC TRA
		longterm, inhalative, systemic	< 0,001	ECETOC TRA
		longterm, dermal, systemic	0,01	ECETOC TRA

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No.

109731

Product name

Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

2.2	PROC2	longterm, inhalative, local	0,1	ECETOC TRA
		longterm, inhalative, systemic	0,1	ECETOC TRA
		longterm, dermal, systemic	0,006	ECETOC TRA
2.2	PROC3	longterm, inhalative, local	0,2	ECETOC TRA
		longterm, inhalative, systemic	0,2	ECETOC TRA
		longterm, dermal, systemic	0,001	ECETOC TRA
2.2	PROC4	longterm, inhalative, local	0,2	ECETOC TRA
		longterm, inhalative, systemic	0,2	ECETOC TRA
		longterm, dermal, systemic	0,03	ECETOC TRA
2.2	PROC5	longterm, inhalative, local	0,5	ECETOC TRA
		longterm, inhalative, systemic	0,5	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
2.2	PROC9	longterm, inhalative, local	0,4	ECETOC TRA
		longterm, inhalative, systemic	0,4	ECETOC TRA
		longterm, dermal, systemic	0,03	ECETOC TRA
2.2	PROC10	longterm, inhalative, local	0,5	ECETOC TRA
		longterm, inhalative, systemic	0,5	ECETOC TRA
		longterm, dermal, systemic	0,1	ECETOC TRA
2.2	PROC15	longterm, inhalative, local	0,1	ECETOC TRA
		longterm, inhalative, systemic	0,1	ECETOC TRA
		longterm, dermal, systemic	0,001	ECETOC TRA
2.3	PROC8a	longterm, inhalative, local	0,4	ECETOC TRA
		longterm, inhalative, systemic	0,4	ECETOC TRA
		longterm, dermal, systemic	0,5	ECETOC TRA
2.4	PROC8b	longterm, inhalative, local	0,1	ECETOC TRA
		longterm, inhalative, systemic	0,1	ECETOC TRA
		longterm, dermal, systemic	0,03	ECETOC TRA

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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).

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

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 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 worker exposure for: PROC15

Product characteristics

Concentration of the Substance in Mixture/Article Covers the percentage of the substance in the product up to 100 %.

Physical Form (at time of use) High volatile liquid

Frequency and duration of use

Frequency of use 5 days/week

Frequency of use 8 hours/day

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with local exhaust ventilation (LEV)

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 80 %)

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731
Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur

Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable gloves tested to EN374. Avoid splashing.

3. Exposure estimation and reference to its source

Environment

A chemical safety assessment was performed according REACH Article 14(3), Annex I, sections 3 (Environmental Hazard Assessment) and 4 (PBT/vPvB Assessment). As no hazard was identified, an exposure assessment and risk characterisation is not necessary (REACH Annex I section 5.0).

Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC8b	longterm, inhalative, local	0,1	ECETOC TRA
		longterm, inhalative, systemic	0,1	ECETOC TRA
		longterm, dermal, systemic	0,03	ECETOC TRA

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).

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 109731

Product name Tetrahydrofuran for analysis EMSURE® ACS, Reag. Ph Eur
