

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 15.08.2017

Version 12.0

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

Catalogue No. 109728

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

REACH Registration Number 01-2119493105-40-XXXX

CAS-No. 110-86-1

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)**

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

Flammable liquid, Category 2, H225

Acute toxicity, Category 4, Oral, H302

Acute toxicity, Category 4, Inhalation, H332

Acute toxicity, Category 4, Dermal, H312

Skin irritation, Category 2, H315

Eye irritation, Category 2, H319

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 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled

H315 Causes skin irritation.

H319 Causes serious eye irritation.

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

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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

Storage

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

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

Reduced labelling (≤125 ml)

Hazard pictograms



Signal word

Danger

Precautionary statements

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

Index-No. 613-002-00-7

2.3 Other hazards

None known.

SECTION 3. Composition/information on ingredients

3.1 Substance

Formula	C ₅ H ₅ N (Hill)
Index-No.	613-002-00-7
EC-No.	203-809-9
Molar mass	79,1 g/mol

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

Chemical name (Concentration)

CAS-No.	Registration number	Classification
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Pyridine (<= 100 %)

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

110-86-1	01-2119493105-40-	
	XXXX	Flammable liquid, Category 2, H225
		Acute toxicity, Category 4, H302
		Acute toxicity, Category 4, H332

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Acute toxicity, Category 4, H312

Skin irritation, Category 2, H315

Eye irritation, Category 2, H319

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. If breathing stops: mouth-to-mouth breathing or artificial respiration.

Oxygen if necessary. Immediately 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, Nausea, Vomiting, cardiovascular disorders, collapse, Headache, insomnia, restlessness

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

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

Unsuitable extinguishing media

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

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5.2 Special hazards arising from the substance or mixture

Combustible.

Pay attention to flashback.

Vapours are heavier than air and may spread along floors.

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

Forms explosive mixtures with air at ambient temperatures.

Fire may cause evolution of:

nitrogen oxides, nitrous gases

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. 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. 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.

6.3 Methods and materials for containment and cleaning up

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Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up 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

Observe label precautions.

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

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.

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

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Product name

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Derived No Effect Level (DNEL)

Worker DNEL, longterm	Systemic effects	inhalation	2,5 mg/m ³
Worker DNEL, acute	Systemic effects	inhalation	7,5 mg/m ³
Worker DNEL, longterm	Systemic effects	dermal	0,14 mg/kg Body weight
Worker DNEL, acute	Systemic effects	dermal	0,42 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	inhalation	0,6 mg/m ³
Consumer DNEL, longterm	Systemic effects	dermal	0,07 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	oral	0,07 mg/kg Body weight

Predicted No Effect Concentration (PNEC)

PNEC Fresh water	0,3 mg/l
PNEC Marine water	0,03 mg/l
PNEC Aquatic intermittent release	3 mg/l
PNEC Sediment	3,2 mg/kg
PNEC Marine sediment	0,32 mg/kg
PNEC Sewage treatment plant	2 mg/l
PNEC Soil	0,46 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.

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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:	> 240 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.

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SECTION 9. Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	liquid
Colour	colourless
Odour	pungent
Odour Threshold	0,0001 - 20,1 ppm
pH	ca. 8,81 at 20 °C
Melting point	-42 °C
Boiling point/boiling range	ca. 115 °C at 1.013 hPa
Flash point	17 °C Method: c.c.
Evaporation rate	12,7
Flammability (solid, gas)	No information available.
Lower explosion limit	1,8 %(V)
Upper explosion limit	12,4 %(V)
Vapour pressure	ca.26,7 hPa at 25 °C
Relative vapour density	2,73

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Density	0,982 g/cm ³ at 20 °C
Relative density	No information available.
Water solubility	ca. 1.000 g/l at 20 °C
Partition coefficient: n-octanol/water	log Pow: ca. 0,64 (20 °C) (experimental) (Lit.) Bioaccumulation is not expected.
Auto-ignition temperature	900 °C at 1.013 hPa
Decomposition temperature	ca. 490 °C
Viscosity, dynamic	ca. 0,88 mPa.s at 25 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

9.2 Other data

Ignition temperature	482 °C
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SECTION 10. Stability and reactivity

10.1 Reactivity

Vapours may form explosive mixture with air.

10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

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10.3 Possibility of hazardous reactions

Risk of explosion with:

perchloric acid, nitrogen oxides, halogen-halogen compounds

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

chlorosulfonic acid, chromium(VI) oxide, Acid anhydrides, fuming sulfuric acid, Oxidizing agents, perchromates, Nitric acid, nitrogen dioxide

Exothermic reaction with:

Fluorine, sulphuric acid, silver perchlorate

10.4 Conditions to avoid

Warming.

10.5 Incompatible materials

rubber, various plastics, various metals

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

LD50 Rat: ca. 1.500 mg/kg

(ECHA)

Symptoms: Vomiting, Nausea

Acute inhalation toxicity

LC50 Rat: 17,1 mg/l; 4 h ; vapour

US-EPA

Symptoms: mucosal irritations, Cough, Shortness of breath

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Acute dermal toxicity

LD50 Rabbit: > 1.000 - 2.000 mg/kg

OECD Test Guideline 402

Skin irritation

Causes skin irritation.

Eye irritation

Causes serious eye irritation.

Sensitisation

Sensitisation test: Guinea pig

Result: negative

(Lit.)

Germ cell mutagenicity

Genotoxicity in vivo

Micronucleus test

Mouse

male

Intraperitoneal injection

Bone marrow

Result: negative

Method: OECD Test Guideline 475

Genotoxicity in vitro

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

In vitro mammalian cell gene mutation test

Chinese hamster lung cells

Result: negative

Method: OECD Test Guideline 476

Carcinogenicity

This information is not available.

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

Reproductive toxicity

This information is not available.

Teratogenicity

Did not show teratogenic effects in animal experiments.

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:

After uptake:

Headache, restlessness, insomnia

In high doses:

narcosis, cardiovascular disorders, Circulatory collapse

Chronic uptake results in damage of:

Liver, Kidney

Good warning effect due to low odour threshold.

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

flow-through test LC50 Pimephales promelas (fathead minnow): 99 mg/l; 96 h

Analytical monitoring: yes

(ECHA)

Toxicity to daphnia and other aquatic invertebrates

EC5 E.sulcatum: 3,5 mg/l; 72 h

(Lit.) (maximum permissible toxic concentration)

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Toxicity to algae

IC50 Scenedesmus quadricauda (Green algae): 120 mg/l; 7 d
(maximum permissible toxic concentration) (Lit.)

Toxicity to bacteria

EC50 Pseudomonas putida: 340 mg/l; 16 h
(Lit.) (maximum permissible toxic concentration)

12.2 Persistence and degradability

Biodegradability

97 %; 28 d; aerobic

OECD Test Guideline 301B

Readily biodegradable

12.3 Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: ca. 0,64 (20 °C)

(experimental)

(Lit.) 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

Additional ecological information

Forms toxic mixtures in water, dilution measures notwithstanding.

Discharge into the environment must be avoided.

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SECTION 13. Disposal considerations

Waste treatment methods

See www.retrologistik.com 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 1282
14.2 Proper shipping name	PYRIDINE
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 1282
14.2 Proper shipping name	PYRIDINE
14.3 Class	3
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 Pyridine for analysis EMSURE® ACS, Reag. Ph Eur

14.1 UN number UN 1282
14.2 Proper shipping name PYRIDINE
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

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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 3

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out according to regulation (EC) No. 1907/2006 (REACH) for this substance.

SECTION 16. Other information

Merck (company-internal/in-house) Occupational Exposure Limit (Merck OEL)

Internal company value 0,8 mg/m³

Short Term Exposure (15 min) Factor 4

Pregnancy risk groups C

There is no reason to fear damage to the embryo, or foetus when the Merck OEL value is observed.

Full text of H-Statements referred to under sections 2 and 3.

H225 Highly flammable liquid and vapour.

H302 Harmful if swallowed.

H312 Harmful in contact with skin.

H315 Causes skin irritation.

H319 Causes serious eye irritation.

H332 Harmful if inhaled.

Training advice

Provide adequate information, instruction and training for operators.

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Labelling

Hazard pictograms



Signal word

Danger

Hazard statements

H225 Highly flammable liquid and vapour.

H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled

H315 Causes skin irritation.

H319 Causes serious eye irritation.

Precautionary statements

Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.

P240 Ground/bond container and receiving equipment.

Response

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

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.

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

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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.

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Product name Pyridine 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

- PC 21* Laboratory chemicals

Process categories

- PROC 1* Use in closed process, no likelihood of exposure
- PROC 2* Use in closed, continuous process with occasional controlled exposure
- PROC 3* Use in closed batch process (synthesis or formulation)
- PROC 4* Use in batch and other process (synthesis) where opportunity for exposure arises
- PROC 5* Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)
- PROC 8a* Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities
- PROC 8b* Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
- PROC 9* Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
- PROC 10* Roller application or brushing
- 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
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2. Contributing scenarios: Operational conditions and risk management measures

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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)	Medium volatile liquid
Process Temperature	< 29 °C

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor without local exhaust ventilation (LEV)
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2.2 Contributing scenario controlling worker exposure for: PROC2, PROC3, PROC8b, 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)	Medium volatile liquid
Process Temperature	< 29 °C

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor with LEV and enhanced general ventilation
Remarks	Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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

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Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Tightly fitting safety goggles

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable coveralls to prevent exposure to the skin.

2.3 Contributing scenario controlling worker exposure for: PROC4, PROC5, PROC8a, PROC9

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)	Medium volatile liquid
Process Temperature	< 29 °C

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor with LEV and enhanced general ventilation
Remarks	Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Tightly fitting safety goggles

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

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable coveralls to prevent exposure to the skin.

2.4 Contributing scenario controlling worker exposure for: PROC10

Product characteristics

Concentration of the Substance in	Covers the percentage of the substance in the product up to
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Product name Pyridine for analysis EMSURE® ACS, Reag. Ph Eur

Mixture/Article 100 %
Physical Form (at time of use) Medium volatile liquid
Process Temperature < 29 °C

Frequency and duration of use

Frequency of use < 15 minutes/day
Frequency of use 5 days/week

Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor with LEV and enhanced general ventilation
Remarks Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Tightly fitting safety goggles

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

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable coveralls to prevent exposure to the skin.

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).

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Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.1	PROC1	acute, inhalative, systemic	0,02	ECETOC TRA 3
		acute, dermal, systemic	0,01	ECETOC TRA 3
		acute, combined, systemic	0,03	
		longterm, inhalative, systemic	0,01	ECETOC TRA 3
		longterm, dermal, systemic	0,24	ECETOC TRA 3
		longterm, combined, systemic	0,26	
2.2	PROC2	acute, inhalative, systemic	0,26	ECETOC TRA 3
		acute, dermal, systemic	0,00	ECETOC TRA 3
		acute, combined, systemic	0,26	
2.2	PROC3	acute, inhalative, systemic	0,53	ECETOC TRA 3
		acute, dermal, systemic	0,00	ECETOC TRA 3
		acute, combined, systemic	0,53	
2.2	PROC8b	acute, inhalative, systemic	0,66	ECETOC TRA 3
		acute, dermal, systemic	0,01	ECETOC TRA 3
		acute, combined, systemic	0,67	
2.2	PROC15	acute, inhalative, systemic	0,53	ECETOC TRA 3
		acute, dermal, systemic	0,00	ECETOC TRA 3
		acute, combined, systemic	0,53	
2.2	PROC2	longterm, inhalative, systemic	0,20	ECETOC TRA 3
		longterm, dermal, systemic	0,05	ECETOC TRA 3
		longterm, combined, systemic	0,25	
2.2	PROC3	longterm, inhalative, systemic	0,40	ECETOC TRA 3
		longterm, dermal, systemic	0,02	ECETOC TRA 3
		longterm, combined, systemic	0,42	
2.2	PROC8b	longterm, inhalative, systemic	0,49	ECETOC TRA 3
		longterm, dermal, systemic	0,24	ECETOC TRA 3
		longterm, combined, systemic	0,74	
2.2	PROC15	longterm, inhalative, systemic	0,40	ECETOC TRA 3
		longterm, dermal, systemic	0,01	ECETOC TRA 3
		longterm, combined, systemic	0,41	

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2.3	PROC4	acute, inhalative, systemic	0,11	ECETOC TRA 3
		acute, dermal, systemic	0,01	ECETOC TRA 3
		acute, combined, systemic	0,11	
2.3	PROC5	acute, inhalative, systemic	0,26	ECETOC TRA 3
		acute, dermal, systemic	0,02	ECETOC TRA 3
		acute, combined, systemic	0,28	
2.3	PROC8a	acute, inhalative, systemic	0,26	ECETOC TRA 3
		acute, dermal, systemic	0,02	ECETOC TRA 3
		acute, combined, systemic	0,28	
2.3	PROC9	acute, inhalative, systemic	0,26	ECETOC TRA 3
		acute, dermal, systemic	0,01	ECETOC TRA 3
		acute, combined, systemic	0,27	
2.3	PROC4	longterm, inhalative, systemic	0,08	ECETOC TRA 3
		longterm, dermal, systemic	0,24	ECETOC TRA 3
		longterm, combined, systemic	0,32	
2.3	PROC5	longterm, inhalative, systemic	0,20	ECETOC TRA 3
		longterm, dermal, systemic	0,49	ECETOC TRA 3
		longterm, combined, systemic	0,69	
2.3	PROC8a	longterm, inhalative, systemic	0,20	ECETOC TRA 3
		longterm, dermal, systemic	0,49	ECETOC TRA 3
		longterm, combined, systemic	0,69	
2.3	PROC9	longterm, inhalative, systemic	0,20	ECETOC TRA 3
		longterm, dermal, systemic	0,24	ECETOC TRA 3
		longterm, combined, systemic	0,44	
2.4	PROC10	acute, inhalative, systemic	0,26	ECETOC TRA 3
		acute, dermal, systemic	0,33	ECETOC TRA 3
		acute, combined, systemic	0,59	
		longterm, inhalative, systemic	0,02	ECETOC TRA 3
		longterm, dermal, systemic	0,98	ECETOC TRA 3
		longterm, combined, systemic	0,99	

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

Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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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.

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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 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)	Medium volatile liquid
Process Temperature	< 29 °C

Frequency and duration of use

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

Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor with LEV and good general ventilation
Remarks	Reduction factor for local exhaust ventilation (LEV) has been used for the calculation of dermal exposure estimates.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Tightly fitting safety goggles

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

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice Wear suitable coveralls to prevent exposure to the skin.

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	PROC15	acute, inhalative, systemic	0,25	ECETOC TRA 3
		acute, dermal, systemic	0,00	ECETOC TRA 3
		acute, combined, systemic	0,25	
		longterm, inhalative, systemic	0,18	ECETOC TRA 3
		longterm, dermal, systemic	0,05	ECETOC TRA 3
		longterm, combined, systemic	0,23	

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

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