

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 8.4  
Revision Date 27.03.2021  
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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Pyridine for analysis EMSURE® ACS, Reag. Ph  
EurProduct Number : 1.09728  
Catalogue No. : 109728  
Brand : Millipore  
Index-No. : 613-002-00-7  
REACH No. : 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

### 1.3 Details of the supplier of the safety data sheet

Company : Merck Life Science UK Limited  
New Road  
The Old Brickyard  
GILLINGHAM  
Dorset  
SP8 4XT  
UNITED KINGDOMTelephone : +44 (0)1747 833-000  
Fax : +44 (0)1747 833-313

### 1.4 Emergency telephone

Emergency Phone # : +44 (0)870 8200418 (CHEMTREC)

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### Classification according to Regulation (EC) No 1272/2008

Flammable liquids (Category 2), H225  
Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 4), H332  
Acute toxicity, Dermal (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.

### 2.2 Label elements

#### Labelling according Regulation (EC) No 1272/2008

Millipore- 1.09728

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The life science business of Merck operates as MilliporeSigma in  
the US and Canada

Pictogram



Signal word

Danger

Hazard statement(s)

H225

Highly flammable liquid and vapor.

H302 + H312 + H332

Harmful if swallowed, in contact with skin or if inhaled.

H315

Causes skin irritation.

H319

Causes serious eye irritation.

Precautionary statement(s)

P210

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

P280

Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

P301 + P312

IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P304 + P340 + P312

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.

P305 + P351 + P338

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

Supplemental Hazard Statements

none

### Reduced Labeling (<= 125 ml)

Pictogram



Signal word

Danger

Hazard statement(s)

none

Precautionary statement(s)

none

Supplemental Hazard Statements

none

## 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Formula	:	C5H5N
Molecular weight	:	79.1 g/mol
CAS-No.	:	110-86-1
EC-No.	:	203-809-9
Index-No.	:	613-002-00-7

Component	Classification	Concentration
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<b>Pyridine</b>			
CAS-No.	110-86-1	Flam. Liq. 2; Acute Tox. 4;	<= 100 %
EC-No.	203-809-9	Skin Irrit. 2; Eye Irrit. 2;	
Index-No.	613-002-00-7	H225, H302, H332, H312, H315, H319	

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

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## **SECTION 4: First aid measures**

### **4.1 Description of first-aid measures**

#### **General advice**

Show this material safety data sheet to the doctor in attendance.

#### **If inhaled**

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**

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

#### **In case of eye contact**

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

#### **If swallowed**

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**

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### **4.3 Indication of any immediate medical attention and special treatment needed**

No data available

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## **SECTION 5: Firefighting measures**

### **5.1 Extinguishing media**

#### **Suitable extinguishing media**

Small (incipient) fires must be extinguished with alcohol resistant foam, dry chemical powder or carbon dioxide. Large amounts of water are ineffective. Cool containers with large amounts of water.

### **5.2 Special hazards arising from the substance or mixture**

Carbon oxides

Nitrogen oxides (NO<sub>x</sub>)

Combustible.

Fire may cause evolution of:

nitrogen oxides, nitrous gases

Pay attention to flashback.

Vapors 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.

### 5.3 Advice 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.

### 5.4 Further information

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, 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. For personal protection 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

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

For disposal see section 13.

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## 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.

#### 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.

For precautions see section 2.2.

### 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)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Ingredients with workplace control parameters

Component	CAS-No.	Value	Control parameters	Basis
Pyridine	110-86-1	TWA	5 ppm 15 mg/m <sup>3</sup>	Europe. Commission Directive 91/322/EEC on establishing indicative limit values
	Remarks	Indicative		
		TWA	5 ppm 16 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits
		STEL	10 ppm 33 mg/m <sup>3</sup>	UK. EH40 WEL - Workplace Exposure Limits

## 8.2 Exposure controls

### Personal protective equipment

#### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

#### Skin protection

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](http://www.kcl.de)).

Splash contact

Material: butyl-rubber

Minimum layer thickness: 0.7 mm

Break through time: 240 min

Material tested: Butoject® (KCL 898)

#### Body Protection

Flame retardant antistatic protective clothing.

#### Respiratory protection

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.

#### Control of environmental exposure

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

- |                   |                                  |
|-------------------|----------------------------------|
| a) Appearance     | Form: liquid<br>Color: colorless |
| b) Odor           | pungent                          |
| c) Odor Threshold | 0.0001 ppm                       |
| d) pH             | ca.8.81 at 20 °C                 |

e) Melting point/freezing point	Melting point: -42 °C
f) Initial boiling point and boiling range	ca.115 °C at 1,013 hPa
g) Flash point	20 °C - closed cup - ISO 1523
h) Evaporation rate	12.7
i) Flammability (solid, gas)	No data available
j) Upper/lower flammability or explosive limits	Upper explosion limit: 12.4 %(V) Lower explosion limit: 1.8 %(V)
k) Vapor pressure	ca.26.7 hPa at 25 °C
l) Vapor density	2.73
m) Relative density	No data available
n) Water solubility	ca.1,000 g/l at 20 °C soluble
o) Partition coefficient: n-octanol/water	log Pow: ca.0.64 at 20 °C - (Lit.), Bioaccumulation is not expected.
p) Autoignition temperature	900 °C at 1,013 hPa
q) Decomposition temperature	ca.490 °C -
r) Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: ca.0.88 mPa.s at 25 °C
s) Explosive properties	No data available
t) Oxidizing properties	No data available

## 9.2 Other safety information

Solubility in other solvents	Diethyl ether at 20 °C - miscible Ethanol at 20 °C - miscible
Surface tension	36.56 mN/m at 25 °C
Dissociation constant	5.25 at 25 °C
Relative vapor density	2.73

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Vapors may form explosive mixture with air.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

Warming.

### 10.5 Incompatible materials

Strong oxidizing agents, Strong acids

### 10.6 Hazardous decomposition products

In the event of fire: see section 5

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## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - 1,500 mg/kg

Remarks: (ECHA)Symptoms: Vomiting, Nausea

LC50 Inhalation - Rat - male - 4 h - 17.1 mg/l  
(US-EPA)

Symptoms: mucosal irritations, Cough, Shortness of breath

LD50 Dermal - Rabbit - > 1,000 - 2,000 mg/kg  
(OECD Test Guideline 402)

#### Skin corrosion/irritation

Skin - Rabbit

Result: Mild skin irritation - 24 h

(Draize Test)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Irritating to eyes. - 24 h

Remarks: (ECHA)

#### Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

#### Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster lung cells

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Micronucleus test

Species: Mouse

Cell type: Bone marrow  
Application Route: Intraperitoneal injection  
Method: OECD Test Guideline 475  
Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information**

Repeated dose toxicity - Rat - male and female - Oral - 102 Weeks - NOAEL (No observed adverse effect level) - 7 mg/kg  
Not available

burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Dizziness, tachycardia, nervousness, insomnia, Skin disorders, loss of appetite  
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Systemic effects:

After uptake:

Headache

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.



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## SECTION 12: Ecological information

### 12.1 Toxicity

Toxicity to fish	semi-static test EC50 - Danio rerio (zebra fish) - 560 - 1,000 mg/l - 96 h (OECD Test Guideline 203) Remarks: (in analogy to similar products)
Toxicity to daphnia and other aquatic invertebrates	EC50 - Daphnia magna (Water flea) - 320 mg/l - 48 h (OECD Test Guideline 202) Remarks: (in analogy to similar products)
Toxicity to algae	static test EC50 - Pseudokirchneriella subcapitata - 320 mg/l - 72 h (OECD Test Guideline 201) Remarks: (in analogy to similar products)
	IC5 - Scenedesmus quadricauda (Green algae) - 120 mg/l - 7 d Remarks: (maximum permissible toxic concentration) (Lit.)
	EC50 - SELENASTRUM - 100.00 - 180.00 mg/l - 72 h

### 12.2 Persistence and degradability

Biodegradability	aerobic - Exposure time 28 d Result: 97 % - Readily biodegradable. (OECD Test Guideline 301B)
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### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

### 12.6 Other adverse effects

No data available

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

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](http://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.

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**SECTION 14: Transport information****14.1 UN number**

ADR/RID: 1282

IMDG: 1282

IATA: 1282

**14.2 UN proper shipping name**

ADR/RID: PYRIDINE

IMDG: PYRIDINE

IATA: Pyridine

**14.3 Transport hazard class(es)**

ADR/RID: 3

IMDG: 3

IATA: 3

**14.4 Packaging group**

ADR/RID: II

IMDG: II

IATA: II

**14.5 Environmental hazards**

ADR/RID: no

IMDG Marine pollutant: no

IATA: no

**14.6 Special precautions for user**

No data available

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**SECTION 15: Regulatory information****15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)

**National legislation**

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

: FLAMMABLE LIQUIDS

**Other regulations**

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

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

**15.2 Chemical Safety Assessment**

A Chemical Safety Assessment has been carried out for this substance.

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**SECTION 16: Other information****Full text of H-Statements referred to under sections 2 and 3.**

H225

Highly flammable liquid and vapor.

H302

Harmful if swallowed.

H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled.  
H312 Harmful in contact with skin.  
H315 Causes skin irritation.  
H319 Causes serious eye irritation.  
H332 Harmful if inhaled.

**Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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## Annex: Exposure scenario

### Identified uses:

#### Use: Industrial use

<b>SU 3:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites
<b>SU 3, SU9, SU 10:</b> Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of fine chemicals, Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
<b>PC19:</b> Intermediate <b>PC21:</b> Laboratory chemicals
<b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC10:</b> Roller application or brushing <b>PROC15:</b> Use as laboratory reagent
<b>ERC2, ERC4, ERC6a, ERC6b:</b> Formulation of preparations, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

#### Use: Professional use

<b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>SU 22:</b> Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
<b>PC21:</b> Laboratory chemicals
<b>PROC15:</b> Use as laboratory reagent
<b>ERC2, ERC6a, ERC6b:</b> Formulation of preparations, Industrial use resulting in manufacture of another substance (use of intermediates), Industrial use of reactive processing aids

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### 1. Short title of Exposure Scenario: Industrial use

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Main User Groups	: <b>SU 3</b>
Sectors of end-use	: <b>SU 3, SU9, SU 10</b>
Chemical product category	: <b>PC19, PC21</b>
Process categories	: <b>PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC15</b>

Environmental Release Categories : **ERC2, ERC4, ERC6a, ERC6b:**

## 2.2 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 % (unless stated differently).  
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)

## 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 % (unless stated differently).  
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  
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

### **Additional good practice advice beyond the REACH Chemical Safety Assessment**

Wear suitable coveralls to prevent exposure to the skin.

## 2.2 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 % (unless stated differently).  
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  
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

Wear suitable coveralls to prevent exposure to the skin.

## 2.2 Contributing scenario controlling worker exposure for: PROC10

### Product characteristics

Concentration of the Substance in Mixture/Article : Covers the percentage of the substance in the product up to 100 % (unless stated differently).  
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  
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

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

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC1	ECETOC TRA 3	acute, inhalative, systemic			0.02
PROC1	ECETOC TRA 3	acute, dermal, systemic			0.01
PROC1		acute, combined, systemic			0.03
PROC1	ECETOC TRA 3	longterm,			0.01

		inhalative, systemic			
PROC1	ECETOC TRA 3	longterm, dermal, systemic			0.24
PROC1		longterm, combined, systemic			0.26
*Risk characterisation ratio					
PROC2	ECETOC TRA 3	acute, inhalative, systemic			0.26
PROC2	ECETOC TRA 3	acute, dermal, systemic			0.00
PROC2		acute, combined, systemic			0.26
PROC3	ECETOC TRA 3	acute, inhalative, systemic			0.53
PROC3	ECETOC TRA 3	acute, dermal, systemic			0.00
PROC3		acute, combined, systemic			0.53
PROC8b	ECETOC TRA 3	acute, inhalative, systemic			0.66
PROC8b	ECETOC TRA 3	acute, dermal, systemic			0.01
PROC8b		acute, combined, systemic			0.67
PROC15	ECETOC TRA 3	acute, inhalative, systemic			0.53
PROC15	ECETOC TRA 3	acute, dermal, systemic			0.00
PROC15		acute, combined, systemic			0.53
PROC2	ECETOC TRA 3	longterm, inhalative, systemic			0.20
PROC2	ECETOC TRA 3	longterm, dermal, systemic			0.05
PROC2		longterm, combined, systemic			0.25
PROC3	ECETOC TRA 3	longterm, inhalative, systemic			0.40
PROC3	ECETOC TRA 3	longterm, dermal,			0.02

		systemic			
PROC3		longterm, combined, systemic			0.42
PROC8b	ECETOC TRA 3	longterm, inhalative, systemic			0.49
PROC8b	ECETOC TRA 3	longterm, dermal, systemic			0.24
PROC8b		longterm, combined, systemic			0.74
PROC15	ECETOC TRA 3	longterm, inhalative, systemic			0.40
PROC15	ECETOC TRA 3	longterm, dermal, systemic			0.01
PROC15		longterm, combined, systemic			0.41

\*Risk characterisation ratio

PROC4	ECETOC TRA 3	acute, inhalative, systemic			0.11
PROC4	ECETOC TRA 3	acute, dermal, systemic			0.01
PROC4		acute, combined, systemic			0.11
PROC5	ECETOC TRA 3	acute, inhalative, systemic			0.26
PROC5	ECETOC TRA 3	acute, dermal, systemic			0.02
PROC5		acute, combined, systemic			0.28
PROC8a	ECETOC TRA 3	acute, inhalative, systemic			0.26
PROC8a	ECETOC TRA 3	acute, dermal, systemic			0.02
PROC8a		acute, combined, systemic			0.28
PROC9	ECETOC TRA 3	acute, inhalative, systemic			0.26
PROC9	ECETOC TRA 3	acute, dermal, systemic			0.01
PROC9		acute, combined, systemic			0.27



PROC4	ECETOC TRA 3	longterm, inhalative, systemic			0.08
PROC4	ECETOC TRA 3	longterm, dermal, systemic			0.24
PROC4		longterm, combined, systemic			0.32
PROC5	ECETOC TRA 3	longterm, inhalative, systemic			0.20
PROC5	ECETOC TRA 3	longterm, dermal, systemic			0.49
PROC5		longterm, combined, systemic			0.69
PROC8a	ECETOC TRA 3	longterm, inhalative, systemic			0.20
PROC8a	ECETOC TRA 3	longterm, dermal, systemic			0.49
PROC8a		longterm, combined, systemic			0.69
PROC9	ECETOC TRA 3	longterm, inhalative, systemic			0.20
PROC9	ECETOC TRA 3	longterm, dermal, systemic			0.24
PROC9		longterm, combined, systemic			0.44

\*Risk characterisation ratio

PROC10	ECETOC TRA 3	acute, inhalative, systemic			0.26
PROC10	ECETOC TRA 3	acute, dermal, systemic			0.33
PROC10		acute, combined, systemic			0.59
PROC10	ECETOC TRA 3	longterm, inhalative, systemic			0.02
PROC10	ECETOC TRA 3	longterm, dermal, systemic			0.98
PROC10		longterm, combined, systemic			0.99

\*Risk characterisation ratio

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

For scaling of worker exposure assessments performed with ECETOC TRA, please consult the Merck tool ScIDeEx® at [www.merckmillipore.com/scideex](http://www.merckmillipore.com/scideex). 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).

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#### 1. Short title of Exposure Scenario: Professional use

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Main User Groups	: SU 22
Sectors of end-use	: SU 22
Chemical product category	: PC21
Process categories	: PROC15
Environmental Release Categories	: ERC2, ERC6a, ERC6b:

#### 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 100 % (unless stated differently).
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
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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

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

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value	Level of Exposure	RCR*
PROC15	ECETOC TRA 3	acute, inhalative, systemic			0.25
PROC15	ECETOC TRA 3	acute, dermal, systemic			0.00
PROC15		acute, combined, systemic			0.25
PROC15	ECETOC TRA 3	longterm, inhalative, systemic			0.18
PROC15	ECETOC TRA 3	longterm, dermal, systemic			0.05
PROC15		longterm, combined, systemic			0.23

\*Risk characterisation ratio

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

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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).