

## SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 01.05.2014

Version 10.1

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

Catalogue No. 109623  
Product name Ethyl acetate for analysis EMSURE® ACS,ISO,Reag. Ph Eur  
REACH Registration Number 01-2119475103-46-XXXX  
CAS-No. 141-78-6

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses Reagent for analysis, Chemical production  
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 EQ-RS \* 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)**

Flammable liquid, Category 2, H225  
Eye irritation, Category 2, H319  
Specific target organ toxicity - single exposure, Category 3, Central nervous system, H336  
For the full text of the H-Statements mentioned in this Section, see Section 16.

**Classification (67/548/EEC or 1999/45/EC)**

F	Highly flammable	R11
Xi	Irritant	R36
		R66
		R67

For the full text of the R-phrases mentioned in this Section, see Section 16.

**2.2 Label elements****Labelling (REGULATION (EC) No 1272/2008)***Hazard pictograms**Signal word*

Danger

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*Hazard statements*

H225 Highly flammable liquid and vapour.  
H319 Causes serious eye irritation.  
H336 May cause drowsiness or dizziness.  
EUH066 Repeated exposure may cause skin dryness or cracking.

*Precautionary statements*

Prevention  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
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.  
Storage  
P403 + P235 Store in a well-ventilated place. Keep cool.

Reduced labelling (≤125 ml)

*Hazard pictograms*



*Signal word*  
Danger

*Index-No.* 607-022-00-5

**2.3 Other hazards**

None known.

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**SECTION 3. Composition/information on ingredients**

**3.1 Substance**

Formula	CH <sub>3</sub> COOC <sub>2</sub> H <sub>5</sub>	C <sub>4</sub> H <sub>8</sub> O <sub>2</sub> (Hill)
Index-No.	607-022-00-5	
EC-No.	205-500-4	
Molar mass	88,11 g/mol	

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

*Chemical Name (Concentration)*

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

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

141-78-6	01-2119475103-46-XXXX	Flammable liquid, Category 2, H225 Eye irritation, Category 2, H319 Specific target organ toxicity - single exposure, Category 3, H336
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For the full text of the H-Statements mentioned in this Section, see Section 16.

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**Hazardous components (1999/45/EC)**

*Chemical Name (Concentration)*

CAS-No.	Classification
ethyl acetate (<= 100 % )	
141-78-6	F, Highly flammable; R11 Xi, Irritant; R36 R66 R67

For the full text of the R-phrases mentioned in this Section, see Section 16.

**3.2 Mixture**

not applicable

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**SECTION 4. First aid measures**

**4.1 Description of first aid measures**

After inhalation: fresh air. Consult doctor if feeling unwell.

After skin contact: wash off with plenty of water. Remove contaminated clothing.

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

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately. Subsequently administer: activated charcoal (20 - 40 g in 10% slurry). Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

**4.2 Most important symptoms and effects, both acute and delayed**

irritant effects, respiratory paralysis, Drowsiness, narcosis, Nausea, Vomiting, Headache, drowsiness, Salivation

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

After swallowing of large amounts: Gastric lavage.

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**SECTION 5. Firefighting measures**

**5.1 Extinguishing media**

*Suitable extinguishing media*

Carbon dioxide (CO<sub>2</sub>), Dry powder, Foam

*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.

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*Further information*

Remove container from danger zone and cool with water. 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 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 empty into 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**

Indications about waste treatment 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.

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.

Recommended storage temperature see product label.

**7.3 Specific end use(s)**

See exposure scenario in the Annex to this MSDS.

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**SECTION 8. Exposure controls/personal protection**

**8.1 Control parameters**

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**Derived No Effect Level (DNEL)**

Worker DNEL, acute	Systemic effects	inhalation	1468 mg/m <sup>3</sup>
Worker DNEL, acute	Local effects	inhalation	1468 mg/m <sup>3</sup>
Worker DNEL, longterm	Systemic effects	dermal	63 mg/kg Body weight
Worker DNEL, longterm	Systemic effects	inhalation	734 mg/m <sup>3</sup>
Worker DNEL, longterm	Local effects	inhalation	734 mg/m <sup>3</sup>
Consumer DNEL, acute	Systemic effects	inhalation	734 mg/m <sup>3</sup>
Consumer DNEL, acute	Local effects	inhalation	734 mg/m <sup>3</sup>
Consumer DNEL, longterm	Systemic effects	dermal	37 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	inhalation	367 mg/m <sup>3</sup>
Consumer DNEL, longterm	Systemic effects	oral	4,5 mg/kg Body weight
Consumer DNEL, longterm	Local effects	inhalation	367 mg/m <sup>3</sup>

**Predicted No Effect Concentration (PNEC)**

PNEC Fresh water	0,26 mg/l
PNEC Marine water	0,026 mg/l
PNEC Fresh water sediment	1,25 mg/kg
PNEC Marine sediment	0,125 mg/kg
PNEC Soil	0,24 mg/kg

**8.2 Exposure controls**

**Engineering measures**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

See section 7.1.

**Individual protection measures**

Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of the hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the respective supplier.

*Eye/face protection*

Safety glasses

*Hand protection*

splash contact:

Glove material:	butyl-rubber
Glove thickness:	0,7 mm
Break through time:	> 120 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.

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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)).

*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 empty into 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	like fruit
Odour Threshold	0,1 - 181,5 ppm
pH	No information available.
Melting point	-83 °C
Boiling point/boiling range	77 °C at 1.013 hPa
Flash point	-4 °C Method: c.c.
Evaporation rate	No information available.
Flammability (solid, gas)	not applicable
Lower explosion limit	2,1 %(V)
Upper explosion limit	11,5 %(V)
Vapour pressure	97 hPa at 20 °C
Relative vapour density	3,04

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Density	0,90 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	85,3 g/l at 20 °C
Partition coefficient: n-octanol/water	log Pow: 0,73 (experimental) (Lit.) Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	Distillable in an undecomposed state at normal pressure.
Viscosity, dynamic	0,44 mPa.s at 20 °C
Explosive properties	Not classified as explosive.
Oxidizing properties	none

#### 9.2 Other data

Ignition temperature	460 °C Method: DIN 51794
Minimum ignition energy	1,42 mJ

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### SECTION 10. Stability and reactivity

#### 10.1 Reactivity

Vapours may form explosive mixture with air.

#### 10.2 Chemical stability

Sensitivity to light  
Sensitive to air.

#### 10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapours with:  
Exothermic reaction with:  
Fluorine, chlorosulfonic acid, Strong oxidizing agents, fuming sulfuric acid  
Risk of explosion with:  
lithium aluminium hydride, Alkali metals, hydrides

#### 10.4 Conditions to avoid

Warming.

#### 10.5 Incompatible materials

various plastics

#### 10.6 Hazardous decomposition products

no information available

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**SECTION 11. Toxicological information**

**11.1 Information on toxicological effects**

*Acute oral toxicity*

LD50 rat: 5.620 mg/kg (RTECS)

Symptoms: Risk of aspiration upon vomiting., Aspiration may cause pulmonary oedema and pneumonitis., Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

*Acute inhalation toxicity*

LC50 rat: 5,86 mg/l; 8 h (Lit.)

Symptoms: Possible damages:, mucosal irritations

*Acute dermal toxicity*

LD50 rabbit: > 18.000 mg/kg (External MSDS)

*Skin irritation*

rabbit

Result: No skin irritation

(IUCLID)

Repeated exposure may cause skin dryness or cracking.

*Eye irritation*

rabbit

Result: slight irritation

OECD Test Guideline 405

(Regulation (EC) No 1272/2008, Annex VI)

Causes serious eye irritation.

*Sensitisation*

Maximisation Test (GPMT) guinea pig

Result: negative

Method: OECD Test Guideline 406

After long-term exposure to the chemical: Sensitisation possible in predisposed persons.

*Germ cell mutagenicity*

*Genotoxicity in vitro*

Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

Mutagenicity (mammal cell test): chromosome aberration.

Result: negative

(National Toxicology Program)

*Carcinogenicity*

This information is not available.

*Reproductive toxicity*

This information is not available.

*Teratogenicity*

This information is not available.

*Specific target organ toxicity - single exposure*

May cause drowsiness or dizziness.



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*Specific target organ toxicity - repeated exposure*

This information is not available.

*Aspiration hazard*

This information is not available.

**11.2 Further information**

Systemic effects:

lack of appetite, Headache

In high concentrations:

Salivation, Nausea, Vomiting, narcosis, respiratory paralysis

Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 12. Ecological information**

**12.1 Toxicity**

*Toxicity to fish*

LC50 Pimephales promelas (fathead minnow): 230 mg/l; 96 h (IUCLID)

*Toxicity to daphnia and other aquatic invertebrates*

EC50 Daphnia magna (Water flea): 717 mg/l; 48 h (IUCLID)

*Toxicity to algae*

IC50 Desmodesmus subspicatus (green algae): 3.300 mg/l; 48 h (IUCLID)

*Toxicity to bacteria*

EC10 Pseudomonas putida: 2.900 mg/l; 16 h (IUCLID)

**12.2 Persistence and degradability**

*Biodegradability*

100 %; 28 d

OECD Test Guideline 301D

Readily biodegradable.

*Theoretical oxygen demand (ThOD)*

1.820 mg/g

(Lit.)

**12.3 Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

log Pow: 0,73

(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*

Discharge into the environment must be avoided.

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**SECTION 13. Disposal considerations**

*Waste treatment methods*

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.

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**SECTION 14. Transport information**

**Land transport (ADR/RID)**

14.1 UN number UN 1173  
14.2 Proper shipping name ETHYL ACETATE  
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 1173  
14.2 Proper shipping name ETHYL ACETATE  
14.3 Class 3  
14.4 Packing group II  
14.5 Environmentally hazardous --  
14.6 Special precautions for user no

**Sea transport (IMDG)**

14.1 UN number UN 1173  
14.2 Proper shipping name ETHYL ACETATE  
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

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**SECTION 15. Regulatory information**

**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**

*EU regulations*

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Major Accident Hazard Legislation 96/82/EC  
Highly flammable  
7b  
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.

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

Regulation (EC) No 689/2008 concerning the export and import of dangerous chemicals not regulated

Substances of very high concern (SVHC) This product does not contain substances of very high concern according to Regulation (EC) No 1907/2006 (REACH), Article 57 above the respective regulatory concentration limit of  $\geq 0.1\%$  (w/w).

*National legislation*  
Storage class 3

## 15.2 Chemical Safety Assessment

For this product a chemical safety assessment was not carried out.

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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 vapour.  
H319 Causes serious eye irritation.  
H336 May cause drowsiness or dizziness.



### Full text of R-phrases referred to under sections 2 and 3

R11 Highly flammable.  
R36 Irritating to eyes.  
R66 Repeated exposure may cause skin dryness or cracking.  
R67 Vapours may cause drowsiness and dizziness.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling (67/548/EEC or 1999/45/EC)

*Symbol(s)*  F Highly flammable  
 Xi Irritant  
*R-phrases* 11-36-66-67 Highly flammable. Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapours may cause drowsiness and dizziness.

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*S*-phrase(s) 16-26-33 Keep away from sources of ignition - No smoking. In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Take precautionary measures against static discharges.

EC-No. 205-500-4 EC Label

**Reduced labelling (≤125 ml)**

Symbol(s)



F



Xi

Highly flammable  
Irritant

**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](http://www.wikipedia.org).

**Regional representation**

This information is given on the authorised Safety Data Sheet for your country.

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*The information contained herein is based on the present state of our knowledge. It characterises the product with regard to the appropriate safety precautions. It does not represent a guarantee of any properties of the product.*

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**EXPOSURE SCENARIO 1 (Industrial use)**

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**1. Industrial use (Reagent for analysis, Chemical production)**

**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**

*PC19* Intermediate  
*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  
*ERC4* Industrial use of processing aids in processes and products, not becoming part of articles  
*ERC6a* Industrial use resulting in manufacture of another substance (use of intermediates)  
*ERC6b* Industrial use of reactive processing aids

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**2. Contributing scenarios: Operational conditions and risk management measures**

**2.1 Contributing scenario controlling environmental exposure for: ERC1**

**Amount used**

Daily amount per site (Msafe) 1.445 kg

**Environment factors not influenced by risk management**

Flow rate 18.000 m<sup>3</sup>/d  
Dilution Factor (River) 10  
Dilution Factor (Coastal Areas) 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year 300

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent 2.000 m<sup>3</sup>/d

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Effectiveness (of a measure) 90 %

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## 2.2 Contributing scenario controlling environmental exposure for: ERC2

### Amount used

Daily amount per site (Msafe) 144.508 kg

### Environment factors not influenced by risk management

Flow rate 18.000 m<sup>3</sup>/d  
Dilution Factor (River) 10  
Dilution Factor (Coastal Areas) 100

### Other given operational conditions affecting environmental exposure

Number of emission days per year 300

### Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent 2.000 m<sup>3</sup>/d  
Effectiveness (of a measure) 87 %

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## 2.3 Contributing scenario controlling environmental exposure for: ERC4

### Amount used

Daily amount per site (Msafe) 20.574 kg

### Environment factors not influenced by risk management

Flow rate 18.000 m<sup>3</sup>/d  
Dilution Factor (River) 10  
Dilution Factor (Coastal Areas) 100

### Other given operational conditions affecting environmental exposure

Number of emission days per year 300

### Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent 2.000 m<sup>3</sup>/d  
Effectiveness (of a measure) 87 %

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## 2.4 Contributing scenario controlling environmental exposure for: ERC6a

### Amount used

Daily amount per site (Msafe) 1.700 kg

### Environment factors not influenced by risk management

Flow rate 18.000 m<sup>3</sup>/d  
Dilution Factor (River) 10  
Dilution Factor (Coastal Areas) 100

### Other given operational conditions affecting environmental exposure

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The Safety Data Sheets for catalogue items are available at [www.merck-chemicals.com](http://www.merck-chemicals.com)

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Number of emission days per year 20  
Emission or Release Factor: Air 2 %  
Emission or Release Factor: Water 5 %  
Emission or Release Factor: Soil 0,1 %

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant Municipal sewage treatment plant  
Flow rate of sewage treatment 2.000 m3/d  
plant effluent  
Effectiveness (of a measure) 87 %

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**2.5 Contributing scenario controlling environmental exposure for: ERC6b**

**Amount used**

Daily amount per site (Msafe) 690 kg

**Environment factors not influenced by risk management**

Flow rate 18.000 m3/d  
Dilution Factor (River) 10  
Dilution Factor (Coastal Areas) 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year 20  
Emission or Release Factor: Air 0,1 %  
Emission or Release Factor: Water 5 %  
Emission or Release Factor: Soil 0,025 %

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant Municipal sewage treatment plant  
Flow rate of sewage treatment 2.000 m3/d  
plant effluent  
Effectiveness (of a measure) 87 %

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**2.6 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, 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 8 hours/day  
Frequency of use 5 days/week

**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.

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

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Additional good practice advice Wear suitable gloves (tested to EN374) and eye protection.

### 3. Exposure estimation and reference to its source

#### Environment

CS	Use descriptor	Msafe	Compartment	RCR	Exposure Assessment Method
2.1	ERC1	1445 kg/day	Fresh water	1	ECETOC TRA
		1445 kg/day	Marine water	1	ECETOC TRA
2.2	ERC2	144508 kg/day	Marine water	1	ECETOC TRA
2.3	ERC4	20574 kg/day	Fresh water	1	ECETOC TRA
		20574 kg/day	Marine water	1	ECETOC TRA
2.4	ERC6a	1700 kg/day	Fresh water sediment	1	ECETOC TRA
2.5	ERC6b	690 kg/day	Fresh water sediment	1	ECETOC TRA

#### Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.6	PROC1	longterm, inhalative, systemic	< 0,001	ECETOC TRA
		longterm, dermal, systemic	0,005	ECETOC TRA
		longterm, combined, systemic	0,01	ECETOC TRA
2.6	PROC2	longterm, inhalative, systemic	0,005	ECETOC TRA
		longterm, dermal, systemic	0,002	ECETOC TRA
		longterm, combined, systemic	0,01	ECETOC TRA
2.6	PROC3	longterm, inhalative, systemic	0,013	ECETOC TRA
		longterm, dermal, systemic	0,001	ECETOC TRA
		longterm, combined, systemic	0,01	ECETOC TRA
2.6	PROC4	longterm, inhalative, systemic	0,010	ECETOC TRA
		longterm, dermal, systemic	0,011	ECETOC TRA
		longterm, combined, systemic	0,02	ECETOC TRA
2.6	PROC5	longterm, inhalative, systemic	0,025	ECETOC TRA
		longterm, dermal, systemic	0,001	ECETOC TRA
		longterm, combined, systemic	0,03	ECETOC TRA
2.6	PROC8a	longterm, inhalative, systemic	0,025	ECETOC TRA
		longterm, dermal, systemic	0,002	ECETOC TRA
		longterm, combined, systemic	0,03	ECETOC TRA
2.6	PROC8b	longterm, inhalative, systemic	0,008	ECETOC TRA
		longterm, dermal, systemic	0,011	ECETOC TRA
		longterm, combined, systemic	0,02	ECETOC TRA
2.6	PROC9	longterm, inhalative, systemic	0,025	ECETOC TRA
		longterm, dermal, systemic	0,011	ECETOC TRA
		longterm, combined, systemic	0,04	ECETOC TRA
2.6	PROC10	longterm, inhalative, systemic	0,025	ECETOC TRA
		longterm, dermal, systemic	0,022	ECETOC TRA
		longterm, combined, systemic	0,05	ECETOC TRA
2.6	PROC15	longterm, inhalative, systemic	0,005	ECETOC TRA
		longterm, dermal, systemic	0,001	ECETOC TRA
		longterm, combined, systemic	0,01	ECETOC TRA

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



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

Catalogue No.	109623
Product name	Ethyl acetate for analysis EMSURE® ACS,ISO,Reag. Ph Eur

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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.merck-chemicals.com](http://www.merck-chemicals.com).

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**EXPOSURE SCENARIO 2 (Professional use)**

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**1. Professional use (Reagent for analysis, Chemical production)**

**Sectors of end-use**

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

**Chemical product category**

*PC21* Laboratory chemicals

**Process categories**

*PROC15* Use as laboratory reagent

**Environmental Release Categories**

*ERC2* Formulation of preparations

*ERC6a* Industrial use resulting in manufacture of another substance (use of intermediates)

*ERC6b* Industrial use of reactive processing aids

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**2. Contributing scenarios: Operational conditions and risk management measures**

**2.1 Contributing scenario controlling environmental exposure for: ERC2**

**Amount used**

Daily amount per site (Msafe) 144.508 kg

**Environment factors not influenced by risk management**

Flow rate 18.000 m<sup>3</sup>/d

Dilution Factor (River) 10

Dilution Factor (Coastal Areas) 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year 300

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant Municipal sewage treatment plant

Flow rate of sewage treatment plant effluent 2.000 m<sup>3</sup>/d

Effectiveness (of a measure) 87 %

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**2.2 Contributing scenario controlling environmental exposure for: ERC6a**

**Amount used**

Daily amount per site (Msafe) 1.700 kg

**Environment factors not influenced by risk management**

Flow rate 18.000 m<sup>3</sup>/d

Dilution Factor (River) 10

Dilution Factor (Coastal Areas) 100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year 20

Emission or Release Factor: Air 2 %

Emission or Release Factor: Water 5 %

Emission or Release Factor: Soil 0,1 %

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**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	2.000 m3/d
Effectiveness (of a measure)	87 %

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**2.3 Contributing scenario controlling environmental exposure for: ERC6b**

**Amount used**

Daily amount per site (Msafe)	690 kg
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**Environment factors not influenced by risk management**

Flow rate	18.000 m3/d
Dilution Factor (River)	10
Dilution Factor (Coastal Areas)	100

**Other given operational conditions affecting environmental exposure**

Number of emission days per year	20
Emission or Release Factor: Air	0,1 %
Emission or Release Factor: Water	5 %
Emission or Release Factor: Soil	0,025 %

**Conditions and measures related to municipal sewage treatment plant**

Type of Sewage Treatment Plant	Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	2.000 m3/d
Effectiveness (of a measure)	87 %

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**2.4 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	8 hours/day
Frequency of use	5 days/week

**Other operational conditions affecting workers exposure**

Outdoor / Indoor	Indoor with local exhaust ventilation (LEV)
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**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) and eye protection.
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**3. Exposure estimation and reference to its source**

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#### Environment

CS	Use descriptor	Msafe	Compartment	RCR	Exposure Assessment Method
2.1	ERC2	144508 kg/day	Marine water	1	ECETOC TRA
2.2	ERC6a	1700 kg/day	Fresh water sediment	1	ECETOC TRA
2.3	ERC6b	690 kg/day	Fresh water sediment	1	ECETOC TRA

#### Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.4	PROC15	longterm, inhalative, systemic	0,01	ECETOC TRA
		longterm, dermal, systemic	0,001	ECETOC TRA
		longterm, combined, systemic	0,01	ECETOC TRA

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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).

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