

**SAFETY DATA SHEET**

according to Regulation (EC) No. 1907/2006

Revision Date 10.09.2018

Version 10.6

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

Catalogue No.	101145
Product name	Ammonium chloride for analysis EMSURE® ACS,ISO,Reag. Ph Eur
REACH Registration Number	01-2119489385-24-XXXX
CAS-No.	12125-02-9

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

Identified uses	Reagent for analysis In compliance with the conditions described in the annex to this safety data sheet.
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**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

<b>1.4 Emergency telephone number</b>	<b>Please contact the regional company representation in your country.</b>
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**SECTION 2. Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Acute toxicity, Category 4, Oral, H302

Eye irritation, Category 2, H319

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

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## 2.2 Label elements

### Labelling (REGULATION (EC) No 1272/2008)

#### *Hazard pictograms*



#### *Signal word*

Warning

#### *Hazard statements*

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

#### *Precautionary statements*

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.

#### **Reduced labelling (≤125 ml)**

#### *Hazard pictograms*



#### *Signal word*

Warning

*Index-No.* 017-014-00-8

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

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Formula NH<sub>4</sub>Cl H<sub>4</sub>CIN (Hill)  
Index-No. 017-014-00-8  
EC-No. 235-186-4  
Molar mass 53,49 g/mol

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

*Chemical name (Concentration)*

CAS-No. Registration number Classification

ammonium chloride (<= 100 % )

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

12125-02-9 01-2119489385-24-

XXXX

Acute toxicity, Category 4, H302

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

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## SECTION 4. First aid measures

### 4.1 Description of first aid measures

After inhalation: fresh air.

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

After eye contact: rinse out with plenty of water. 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

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The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large quantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.

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

No information available.

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### SECTION 5. Firefighting measures

#### 5.1 Extinguishing media

##### *Suitable extinguishing media*

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

##### *Unsuitable extinguishing media*

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

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

Not combustible.

Ambient fire may liberate hazardous vapours.

Fire may cause evolution of:

nitrogen oxides, Hydrogen chloride gas

#### 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*

Suppress (knock down) gases/vapours/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: Avoid inhalation of dusts. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

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Advice for emergency responders: Protective equipment see section 8.

## 6.2 Environmental precautions

Do not empty into drains.

## 6.3 Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

## 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*

Observe label precautions.

#### *Hygiene measures*

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

### 7.2 Conditions for safe storage, including any incompatibilities

#### *Storage conditions*

Tightly closed. Dry.

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, longterm	Systemic effects	inhalation	43,97 mg/m <sup>3</sup>
Worker DNEL, longterm	Systemic effects	dermal	128,9 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	inhalation	9,4 mg/m <sup>3</sup>
Consumer DNEL, longterm	Systemic effects	dermal	55,2 mg/kg Body weight
Consumer DNEL, longterm	Systemic effects	oral	55,2 mg/kg Body weight

## Predicted No Effect Concentration (PNEC)

PNEC Fresh water	0,25 mg/l
PNEC Fresh water sediment	0,9 mg/kg
PNEC Marine water	0,025 mg/l
PNEC Marine sediment	0,09 mg/kg
PNEC Aquatic intermittent release	0,43 mg/l
PNEC Soil	50,7 mg/kg
PNEC Sewage treatment plant	13,1 mg/l

## 8.2 Exposure controls

### Engineering measures

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

See section 7.1.

### Individual protection measures

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

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## *Eye/face protection*

Safety glasses

## *Hand protection*

full contact:

Glove material: Nitrile rubber

Glove thickness: 0,11 mm

Break through time: > 480 min

splash contact:

Glove material: Nitrile rubber

Glove thickness: 0,11 mm

Break through time: > 480 min

The protective gloves to be used must comply with the specifications of EC Directive 89/686/EEC and the related standard EN374, for example KCL 741 Dermatril® L (full contact), KCL 741 Dermatril® L (splash contact).

The breakthrough times stated above were determined by KCL in laboratory tests acc. to EN374 with samples of the recommended glove types.

This recommendation applies only to the product stated in the safety data sheet(>,<)> supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

## *Other protective equipment*

protective clothing

## *Respiratory protection*

required when dusts are generated.

Recommended Filter type: Filter P 2 (acc. to DIN 3181) for solid and liquid particles of harmful substances

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.

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## Environmental exposure controls

Do not empty into drains.

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## SECTION 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form	Crystalline powder
Colour	white
Odour	odourless
Odour Threshold	Not applicable
pH	ca. 4,7 at 200 g/l 25 °C (External MSDS)
Melting point	338 °C (sublimed), (External MSDS)
Boiling point/boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	No information available.
Flammability (solid, gas)	The product is not flammable.
Lower explosion limit	No information available.
Upper explosion limit	No information available.



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Vapour pressure 66 hPa  
at 250 °C  
(External MSDS)

1,3 hPa  
at 30 °C

Relative vapour density No information available.

Density 1,53 g/cm<sup>3</sup>  
at 25 °C

Relative density No information available.

Water solubility 372 g/l  
at 20 °C  
(External MSDS)

Partition coefficient: n-  
octanol/water Not applicable

Auto-ignition temperature No information available.

Decomposition temperature Not applicable

Viscosity, dynamic No information available.

Explosive properties Not classified as explosive.

Oxidizing properties none

## 9.2 Other data

Ignition temperature > 400 °C

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Bulk density ca.600 - 900 kg/m<sup>3</sup>

Particle size Mean particle size  
0,116 mm

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

See section 10.3

### 10.2 Chemical stability

sublimable

### 10.3 Possibility of hazardous reactions

Violent reactions possible with:

alkali hydroxides, acids

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

halogen-halogen compounds, alkalines, alkaline substances

Risk of explosion with:

nitrates, chlorates, Heavy metal salts, nitrites, Hydrogen cyanide (hydrocyanic acid), Chlorine, silver salt, Strong oxidizing agents

### 10.4 Conditions to avoid

no information available

### 10.5 Incompatible materials

Aluminium, Lead, Iron, Copper, copper compounds

### 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 oral toxicity*

LD50 Rat: 1.410 mg/kg

OECD Test Guideline 401

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

#### *Acute inhalation toxicity*

Symptoms: Possible damages:, mucosal irritations

#### *Acute dermal toxicity*

LD50 Rat: > 2.000 mg/kg

(ECHA)

#### *Skin irritation*

Rabbit

Result: No skin irritation

Draize Test

#### *Eye irritation*

Causes serious eye irritation.

Rabbit

Result: Eye irritation

OECD Test Guideline 405

#### *Sensitisation*

Maximisation Test Guinea pig

Result: negative

(ECHA)

#### *Germ cell mutagenicity*

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## *Genotoxicity in vivo*

Micronucleus test

Mouse

male

Intraperitoneal injection

Bone marrow

Result: negative

Method: OECD Test Guideline 474

## *Genotoxicity in vitro*

HGPRT (cell forward mutation assay)

Result: negative

Method: OECD Test Guideline 476

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

## *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*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

This information is not available.

## *Repeated dose toxicity*

Rat

male and female

Oral

90 d

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daily

NOAEL: 1.695,7 mg/kg

OECD Test Guideline 408

Subchronic toxicity

*Aspiration hazard*

This information is not available.

## 11.2 Further information

The following applies to ammonium salts in general: after swallowing: local irritation symptoms, nausea, vomiting, diarrhoea. Systemic effect: after the uptake of very large quantities: drop in blood pressure, collapse, CNS disorders, spasms, narcotic conditions, respiratory paralysis, haemolysis.

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*

LC50 *Oncorhynchus mykiss* (rainbow trout): 42,91 mg/l; 96 h

Analytical monitoring: yes

US-EPA

*Toxicity to daphnia and other aquatic invertebrates*

static test EC50 *Daphnia magna* (Water flea): > 100 mg/l; 48 h

Analytical monitoring: yes

(ECHA)

*Toxicity to bacteria*

static test EC50 activated sludge: 1.310 mg/l; 0,5 h

OECD Test Guideline 209

*Toxicity to fish (Chronic toxicity)*

flow-through test EC10 *Lepomis macrochirus* (Bluegill sunfish): 4,28 mg/l; 30 d

Analytical monitoring: yes

(ECHA)

### 12.2 Persistence and degradability

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

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## *Biodegradability*

The methods for determining the biological degradability are not applicable to inorganic substances.

### **12.3 Bioaccumulative potential**

*Partition coefficient: n-octanol/water*

Not applicable

### **12.4 Mobility in soil**

No information available.

### **12.5 Results of PBT and vPvB assessment**

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

### **12.6 Other adverse effects**

Discharge into the environment must be avoided.

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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 - 14.6** Not classified as dangerous in the meaning of transport regulations.

### **Inland waterway transport (ADN)**

Not relevant

### **Air transport (IATA)**

**14.1 - 14.6** Not classified as dangerous in the meaning of transport regulations.

### **Sea transport (IMDG)**

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**14.1 - 14.6** Not classified as dangerous in the meaning of transport regulations.

**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*

Major Accident Hazard SEVESO III

Legislation Not applicable

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

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

Regulation (EC) No 1005/2009 on substances that 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

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 10 - 13

### 15.2 Chemical safety assessment

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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.

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

### Training advice

Provide adequate information, instruction and training for operators.

### Labelling

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

*Precautionary statements*

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.

### Key or legend to abbreviations and acronyms used in the safety data sheet



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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)

#### Sectors of end-use

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

#### Chemical product category

- PC21* Laboratory chemicals

#### Process categories

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

#### Environmental Release Categories

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

## Frequency and duration of use

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

## Other operational conditions affecting workers exposure

Outdoor / Indoor	Indoor without local exhaust ventilation (LEV)
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## Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

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

Use suitable eye protection.

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## 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	longterm, inhalative, systemic	< 0,02	ECETOC TRA
		longterm, dermal, systemic	< 0,003	ECETOC TRA
		longterm, combined, systemic	< 0,02	
2.1	PROC2	longterm, inhalative, systemic	0,01	ECETOC TRA
		longterm, dermal, systemic	0,01	ECETOC TRA
		longterm, combined, systemic	0,02	
2.1	PROC3	longterm, inhalative, systemic	0,02	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
		longterm, combined, systemic	0,023	
2.1	PROC4	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,05	ECETOC TRA
		longterm, combined, systemic	0,16	
2.1	PROC5	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,11	ECETOC TRA
		longterm, combined, systemic	0,22	
2.1	PROC8a	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,11	ECETOC TRA
		longterm, combined, systemic	0,22	
2.1	PROC8b	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,05	ECETOC TRA
		longterm, combined, systemic	0,16	
2.1	PROC9	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,05	ECETOC TRA
		longterm, combined, systemic	0,16	
2.1	PROC10	longterm, inhalative, systemic	0,11	ECETOC TRA
		longterm, dermal, systemic	0,21	ECETOC TRA
		longterm, combined, systemic	0,32	
2.1	PROC15	longterm, inhalative, systemic	0,01	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
		longterm, combined, systemic	0,013	

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

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

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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;

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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](http://www.merckmillipore.com/scideex).

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## EXPOSURE SCENARIO 2 (Professional use)

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### 1. Professional use Reagent for analysis)

#### Sectors of end-use

*SU22* 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

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#### 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) Solid, medium dustiness

#### Frequency and duration of use

Frequency of use 5 days/week

Frequency of use 8 hours/day

#### Other operational conditions affecting workers exposure

Outdoor / Indoor Indoor without local exhaust ventilation (LEV)

#### Organisational measures to prevent /limit releases, dispersion and exposure

Covers daily exposures up to 8 hours.

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

Use suitable eye protection.

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## 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	longterm, inhalative, systemic	0,01	ECETOC TRA
		longterm, dermal, systemic	0,003	ECETOC TRA
		longterm, combined, systemic	0,013	

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

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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](http://www.merckmillipore.com/scideex).

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Catalogue No. 101145

Product name Ammonium chloride for analysis EMSURE® ACS,ISO,Reag. Ph Eur

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