

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Revision Date 01.01.2018

Version 17.4

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

### 1.1 Product identifier

Catalogue No.	107979
Product name	Thiourea GR for analysis ACS, Reag. Ph Eur
REACH Registration Number	01-2119977062-37-xxxx
CAS-No.	62-56-6

### 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

1.4 Emergency telephone number	Please contact the regional company representation in your country.
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## SECTION 2. Hazards identification

### 2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

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Acute toxicity, Category 4, Oral, H302

Carcinogenicity, Category 2, H351

Reproductive toxicity, Category 2, H361d

Chronic aquatic toxicity, Category 2, H411

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

## 2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

*Hazard pictograms*



*Signal word*

Warning

*Hazard statements*

H302 Harmful if swallowed.

H351 Suspected of causing cancer.

H361d Suspected of damaging the unborn child.

H411 Toxic to aquatic life with long lasting effects.

*Precautionary statements*

Prevention

P273 Avoid release to the environment.

Response

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

**Reduced labelling ( $\leq 125$  ml)**

*Hazard pictograms*



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*Signal word*

Warning

*Hazard statements*

H351 Suspected of causing cancer.

H361d Suspected of damaging the unborn child.

*Precautionary statements*

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

*Index-No.* 612-082-00-0

## 2.3 Other hazards

None known.

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## SECTION 3. Composition/information on ingredients

### 3.1 Substance

Formula	H <sub>2</sub> NCSNH <sub>2</sub>	CH <sub>4</sub> N <sub>2</sub> S (Hill)
Index-No.	612-082-00-0	
EC-No.	200-543-5	
Molar mass	76,12 g/mol	

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

*Chemical name (Concentration)*

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

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

62-56-6	01-2119977062-37-
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xxxx

Acute toxicity, Category 4, H302

Carcinogenicity, Category 2, H351

Reproductive toxicity, Category 2, H361d

Chronic aquatic toxicity, Category 2, H411

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

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## 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. Call in physician.

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

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

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

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

irritant effects, Diarrhoea, Nausea, Vomiting, Stomach/intestinal disorders

### 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*

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

*Unsuitable extinguishing media*

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

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

Combustible.

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

Fire may cause evolution of:

Sulphur oxides, nitrogen oxides, nitrous gases

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## 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.

Advice for emergency responders:

Protective equipment see section 8.

### 6.2 Environmental precautions

Do not let product enter 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

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## *Advice on safe handling*

Observe label precautions.

Work under hood. Do not inhale substance/mixture.

## *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*

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	Long-term systemic effects	dermal	1 mg/m <sup>3</sup>
Worker DNEL, longterm	Long-term systemic effects	inhalation	3,4 mg/kg Body weight
Consumer DNEL, longterm	Long-term systemic effects	dermal	1,7 mg/kg Body weight
Consumer DNEL, longterm	Long-term systemic effects	inhalation	0,2 mg/m <sup>3</sup>
Consumer DNEL, longterm	Long-term systemic effects	oral	0,1 mg/kg Body weight

## Predicted No Effect Concentration (PNEC)

PNEC Fresh water	0,01 mg/l
PNEC Fresh water sediment	0,072 mg/kg
PNEC Marine water	0,001 mg/l
PNEC Marine sediment	0,007 mg/kg
PNEC Sewage treatment plant	0,38 mg/l
PNEC Soil	2,725 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.

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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 B-(P3)

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

## **Environmental exposure controls**

Do not let product enter drains.



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## SECTION 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Form	solid
Colour	colourless
Odour	odourless
Odour Threshold	Not applicable
pH	6 - 8 at 50 g/l 20 °C
Melting point/range	169 - 173 °C
Boiling point/boiling range	Not applicable, (decomposition)
Flash point	No information available.
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	Not applicable
Upper explosion limit	Not applicable
Vapour pressure	at 20 °C Not applicable
Relative vapour density	No information available.

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Density	1,405 g/cm <sup>3</sup> at 20 °C
Relative density	No information available.
Water solubility	137 g/l at 20 °C
Partition coefficient: n-octanol/water	log Pow: -0,92 (20 °C) OECD Test Guideline 107 Bioaccumulation is not expected.
Auto-ignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	No information available.
Explosive properties	Not classified as explosive.
Oxidizing properties	none

## 9.2 Other data

Ignition temperature	440 °C Dust
Bulk density	640 kg/m <sup>3</sup>

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## SECTION 10. Stability and reactivity

### 10.1 Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

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## 10.2 Chemical stability

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

## 10.3 Possibility of hazardous reactions

Risk of explosion with:

chlorates

Violent reactions possible with:

acryl aldehyde

Exothermic reaction with:

Nitric acid, hydrogen peroxide, Acrolein, Strong oxidizing agents, Strong acids and strong bases

## 10.4 Conditions to avoid

Strong heating (decomposition).

## 10.5 Incompatible materials

no information available

## 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: 1.750 mg/kg

(External MSDS)

Symptoms: Nausea, Vomiting, Diarrhoea, Stomach/intestinal disorders

*Acute inhalation toxicity*

Symptoms: Possible damages:, May cause irritation of respiratory tract.

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## *Acute dermal toxicity*

LD50 Rabbit: > 2.800 mg/kg

(External MSDS)

## *Skin irritation*

Rabbit

Result: No irritation

OECD Test Guideline 404

## *Eye irritation*

Rabbit

Result: slight irritation

OECD Test Guideline 405

## *Sensitisation*

Sensitisation possible in predisposed persons.

## *Germ cell mutagenicity*

### *Genotoxicity in vitro*

Ames test

Result: negative

(External MSDS)

## *Carcinogenicity*

This information is not available.

## *Reproductive toxicity*

This information is not available.

## *Teratogenicity*

This information is not available.

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## *CMR effects*

Carcinogenicity:

Suspected of causing cancer.

Teratogenicity:

Suspected of damaging the unborn child.

## *Specific target organ toxicity - single exposure*

This information is not available.

## *Specific target organ toxicity - repeated exposure*

This information is not available.

## *Aspiration hazard*

This information is not available.

## 11.2 Further information

After absorption:

Changes in the blood count

Damage to:

thyroid, Bone marrow

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

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## SECTION 12. Ecological information

### 12.1 Toxicity

#### *Toxicity to fish*

LC50 Danio rerio (zebra fish): 10.000 mg/l; 96 h

(External MSDS)

#### *Toxicity to daphnia and other aquatic invertebrates*

EC50 Daphnia magna (Water flea): 35 mg/l; 48 h

(IUCLID)

#### *Toxicity to algae*

IC50 Desmodesmus subspicatus (green algae): 3,8 - 10 mg/l; 72 h

(IUCLID)

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## *Toxicity to bacteria*

EC10 *Pseudomonas putida*: 1.265 mg/l; 18 h  
(IUCLID)

## **12.2 Persistence and degradability**

### *Biodegradability*

0 %; 34 d

OECD Test Guideline 301C

Not readily biodegradable.

### *Biochemical Oxygen Demand (BOD)*

13 mg/g (5 d)

(IUCLID)

## **12.3 Bioaccumulative potential**

### *Partition coefficient: n-octanol/water*

log Pow: -0,92 (20 °C)

OECD Test Guideline 107

Bioaccumulation is not expected.

## **12.4 Mobility in soil**

No information available.

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

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

## **12.6 Other adverse effects**

Discharge into the environment must be avoided.

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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 3077
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (THIOUREA)
14.3 Class	9
14.4 Packing group	III
14.5 Environmentally hazardous	yes
14.6 Special precautions for user	yes

Tunnel restriction code -

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

### Inland waterway transport (ADN)

Not relevant

### Air transport (IATA)

14.1 UN number	UN 3077
14.2 Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (THIOUREA)
14.3 Class	9
14.4 Packing group	III
14.5 Environmentally hazardous	yes

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**14.6 Special precautions for user** no

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

## Sea transport (IMDG)

**14.1 UN number** UN 3077

**14.2 Proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (THIOUREA)

**14.3 Class** 9

**14.4 Packing group** III

**14.5 Environmentally hazardous** yes

**14.6 Special precautions for user** yes

EmS F-A S-F

Packages smaller than or equal to 5 kg / L , not dangerous goods of Class 9

**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 ENVIRONMENTAL HAZARDS

E2

Quantity 1: 200 t

Quantity 2: 500 t

Occupational restrictions Take note of Dir 94/33/EC on the protection of young people at work. Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.



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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

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.
H351	Suspected of causing cancer.
H361d	Suspected of damaging the unborn child.
H411	Toxic to aquatic life with long lasting effects.

### Training advice

Provide adequate information, instruction and training for operators.

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## Labelling

### *Hazard pictograms*



### *Signal word*

Warning

### *Hazard statements*

H302 Harmful if swallowed.

H351 Suspected of causing cancer.

H361 Suspected of damaging fertility or the unborn child.

H411 Toxic to aquatic life with long lasting effects.

### *Precautionary statements*

#### Prevention

P273 Avoid release to the environment.

#### Response

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

## 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)

#### 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

- 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

- 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

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## Amount used

Daily amount per site (Msafe)	3.380 kg
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## Environment factors not influenced by risk management

Dilution Factor (River)	10
Dilution Factor (Coastal Areas)	100

## Other given operational conditions affecting environmental exposure

Number of emission days per year	300
Emission or Release Factor: Air	0,002 %
Emission or Release Factor: Water	0,001 %
Emission or Release Factor: Soil	0,01 %

## 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
Sludge Treatment	Can be landfilled, when in compliance with local regulations.

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## 2.2 Contributing scenario controlling environmental exposure for: ERC6a

### Amount used

Daily amount per site (Msafe)	806.000 kg
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### Environment factors not influenced by risk management

Dilution Factor (River)	10
Dilution Factor (Coastal Areas)	100

### Other given operational conditions affecting environmental exposure

Number of emission days per year	300
Emission or Release Factor: Air	0,005 %
Emission or Release Factor: Water	0 %
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
Sludge Treatment	Can be landfilled, when in compliance with local regulations.

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## 2.3 Contributing scenario controlling environmental exposure for: ERC6b

### Amount used

Daily amount per site (Msafe)	676 kg
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### Environment factors not influenced by risk management

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	0,05 %
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
Sludge Treatment	Can be landfilled, when in compliance with local regulations.

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## 2.4 Contributing scenario controlling worker exposure for: PROC3, PROC4, PROC8b, PROC9, PROC15

### Product characteristics

Concentration of the Substance in Mixture/Article	Covers the percentage of the substance in the product up to 100 %.
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Physical Form (at time of use) Solid, low dustiness

## 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 activities

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

Covers daily exposures up to 8 hours.

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

Wear suitable gloves tested to EN374.

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## 2.5 Contributing scenario controlling worker exposure for: PROC5, PROC8a

### Product characteristics

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

Physical Form (at time of use) Solid, low dustiness

### 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

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

Covers daily exposures up to 8 hours.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

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## 2.6 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 %.

Physical Form (at time of use) Solid, low dustiness

### 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.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

## 3. Exposure estimation and reference to its source

### Environment

CS	Use descriptor	Msafe	Compartment	RCR	Exposure Assessment Method
2.1	ERC2		Marine water	1	ECETOC TRA 3
2.2	ERC6a		Marine water	1	ECETOC TRA 3
2.3	ERC6b		Marine water	1	ECETOC TRA 3

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## Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.4	PROC3	longterm, inhalative, systemic	0,1	ECETOC TRA 3
		longterm, dermal, systemic	0,04	ECETOC TRA 3
		longterm, combined, systemic	0,14	
2.4	PROC4	longterm, inhalative, systemic	0,5	ECETOC TRA 3
		longterm, dermal, systemic	0,4	ECETOC TRA 3
		longterm, combined, systemic	0,9	
2.4	PROC8b	longterm, inhalative, systemic	0,1	ECETOC TRA 3
		longterm, dermal, systemic	0,8	ECETOC TRA 3
		longterm, combined, systemic	0,9	
2.4	PROC9	longterm, inhalative, systemic	0,1	ECETOC TRA 3
		longterm, dermal, systemic	0,4	ECETOC TRA 3
		longterm, combined, systemic	0,5	
2.4	PROC15	longterm, inhalative, systemic	0,1	ECETOC TRA 3
		longterm, dermal, systemic	0,02	ECETOC TRA 3
		longterm, combined, systemic	0,12	
2.5	PROC5	longterm, inhalative, systemic	0,5	ECETOC TRA 3
		longterm, dermal, systemic	0,4	ECETOC TRA 3
		longterm, combined, systemic	0,9	
2.5	PROC8a	longterm, inhalative, systemic	0,5	ECETOC TRA 3
		longterm, dermal, systemic	0,4	ECETOC TRA 3
		longterm, combined, systemic	0,9	
2.6	PROC10	longterm, inhalative, systemic	0,05	ECETOC TRA 3
		longterm, combined, systemic	0,85	ECETOC TRA 3
		longterm, dermal, systemic	0,8	

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

For (other) acute and 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; 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

*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) 3.380 kg

##### Environment factors not influenced by risk management

Dilution Factor (River) 10

Dilution Factor (Coastal Areas) 100

##### Other given operational conditions affecting environmental exposure

Number of emission days per year 300

Emission or Release Factor: Air 0,002 %

Emission or Release Factor: Water 0,001 %

Emission or Release Factor: Soil 0,01 %

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

Type of Sewage Treatment Plant Municipal sewage treatment plant

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Flow rate of sewage treatment plant effluent	2.000 m3/d
Sludge Treatment	Can be landfilled, when in compliance with local regulations.

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## 2.2 Contributing scenario controlling environmental exposure for: ERC6a

### Amount used

Daily amount per site (Msafe)	806.000 kg
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### Environment factors not influenced by risk management

Dilution Factor (River)	10
Dilution Factor (Coastal Areas)	100

### Other given operational conditions affecting environmental exposure

Number of emission days per year	300
Emission or Release Factor: Air	0,005 %
Emission or Release Factor: Water	0 %
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 plant effluent	2.000 m3/d
Sludge Treatment	Can be landfilled, when in compliance with local regulations.

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## 2.3 Contributing scenario controlling environmental exposure for: ERC6b

### Amount used

Daily amount per site (Msafe)	676 kg
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### Environment factors not influenced by risk management

Dilution Factor (River)	10
Dilution Factor (Coastal Areas)	100

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## 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	0,05 %
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
Sludge Treatment	Can be landfilled, when in compliance with local regulations.

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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)	Solid, low dustiness

### 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
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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

Wear suitable gloves tested to EN374.

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## 3. Exposure estimation and reference to its source

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

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## Environment

CS	Use descriptor	Msafe	Compartment	RCR	Exposure Assessment Method
2.1	ERC2		Marine water	1	ECETOC TRA 3
2.2	ERC6a		Marine water	1	ECETOC TRA 3
2.3	ERC6b		Marine water	1	ECETOC TRA 3

## Workers

CS	Use descriptor	Exposure duration, route, effect	RCR	Exposure Assessment Method
2.4	PROC15	longterm, inhalative, systemic	0,1	ECETOC TRA 3
		longterm, dermal, systemic	0,02	ECETOC TRA 3
		longterm, combined, systemic	0,12	

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

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

## 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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