Sulfolane - A Anhydrous

Version 3.5 Revision Date 2021-09-15

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2015/830

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1

Product information

Product Name : Sulfolane - A Anhydrous
Material : 1126072, 1125132, 1122438, 1115722, 1114955, 1100709, 1098522, 1093880, 1024635, 1024637, 1024641, 1024640, 1024644, 1024636, 1024639, 1024638, 1032498, 1024634

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
Sulfolane	126-33-0 204-783-1 016-031-00-8	Chevron Phillips Chemicals International NV 01-2119565139-32-0000

1.2

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

Relevant Identified Uses Supported : Use as an aromatics extraction solvent - industrial
Use in acid gas purification – industrial
Formulation
Use as a cleaning agent – industrial

1.3

Details of the supplier of the safety data sheet

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals International N.V.
Airport Plaza (Stockholm Building)
Leonardo Da Vincilaan 19
1831 Diegem
Belgium

SDS Requests: (800) 852-5530
Responsible Party: Product Safety Group

Email:sds@cpchem.com

1.4

Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)
Transport:
CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431

Responsible Department	:	Product Safety and Toxicology Group
E-mail address	:	SDS@CPChem.com
Website	:	www.CPChem.com

SECTION 2: Hazards identification

2.1

Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Acute toxicity, Category 4	H302: Harmful if swallowed.
Reproductive toxicity, Category 1B	H360: May damage fertility or the unborn child.

2.2

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Danger

Hazard Statements	:	H302 Harmful if swallowed. H360 May damage fertility or the unborn child.
Precautionary Statements	:	**Prevention:**
		P201 Obtain special instructions before use.
		P202 Do not handle until all safety precautions have been read and understood.
		P264 Wash skin thoroughly after handling.
		P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
		Response:
		P308 + P313 IF exposed or concerned: Get medical advice/ attention.
		Disposal:
		P501 Dispose of contents/ container to an approved waste disposal plant.

Hazardous ingredients which must be listed on the label:
- 126-33-0 Sulfolane

Additional Labeling:

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 1 %
The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 1 %

SECTION 3: Composition/information on ingredients

3.1 - 3.2
Substance or Mixture

Synonyms : Tetramethylene Sulfone
Sulfolane Anhydrous
Tetrahydrothiophene 1,1-dioxide

Molecular formula : C4H8SO2

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
Sulfolane	126-33-0 204-783-1 016-031-00-8	Acute Tox. 4; H302 Repr. 1B; H360	99 - 100

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

SECTION 4: First aid measures

4.1
Description of first-aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance.

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : 166°C (331°F)
Method: closed cup

Autoignition temperature	:	No data available

5.1
Extinguishing media

Unsuitable extinguishing media	:	High volume water jet.

5.2
Special hazards arising from the substance or mixture

Specific hazards during fire fighting	:	Do not allow run-off from fire fighting to enter drains or water courses.

5.3
Advice for firefighters

Special protective equipment for fire-fighters	:	Wear self-contained breathing apparatus for firefighting if necessary.
Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
Fire and explosion protection	:	Normal measures for preventive fire protection.
Hazardous decomposition products	:	Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

6.1
Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Use personal protective equipment.

6.2
Environmental precautions

Environmental precautions	:	Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3
Methods and materials for containment and cleaning up

Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

6.4
Reference to other sections

Reference to other sections	:	For personal protection see section 8. For disposal considerations see section 13.

SECTION 7: Handling and storage

7.1
Precautions for safe handling

Handling

Advice on safe handling : Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

7.2

Conditions for safe storage, including any incompatibilities

Storage

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

8.1

Control parameters

Chevron Phillips Chemical Company LP

Components	Basis	Value	Control parameters	Note
Sulfolane	Manufacturer	TWA	0,37 ppm,	

DNEL : End Use: Workers
Routes of exposure: Dermal
Potential health effects: Long-term systemic effects
Value: 0,2 mg/kg

DNEL : End Use: Workers
Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 2,16 mg/m3

DNEL : End Use: Consumers
Routes of exposure: Dermal
Potential health effects: Long-term systemic effects
Value: 0,015 mg/kg

DNEL : End Use: Consumers
Routes of exposure: Inhalation
Potential health effects: Long-term systemic effects
Value: 0,3 mg/m3

PNEC : Fresh water
Value: 0,1 mg/l

PNEC : Marine water
Value: 0,01 mg/l

PNEC	:	Fresh water sediment Value: 0,39 mg/kg
PNEC	:	Marine sediment Value: 0,039 mg/kg
PNEC	:	Soil Value: 0,02 mg/kg

8.2

Exposure controls
Engineering measures

Adequate ventilation to control airborned concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection	:	Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Protective suit. Safety shoes.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties

9.1

Information on basic physical and chemical properties

Appearance

Form	:	liquid
Physical state	:	liquid
Color	:	Clear
Odor	:	Mild

Safety data

Flash point	:	166°C (331°F) Method: closed cup
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Oxidizing properties	:	No
Autoignition temperature	:	No data available
Molecular formula	:	C4H8SO2
Molecular weight	:	120,18 g/mol
pH	:	Not applicable
Freezing point	:	26°C (79°F)
Pour point		No data available
Boiling point/boiling range	:	282-288°C (540-550°F)
Vapor pressure	:	1,14 MMHG at 37,8°C (100,0°F)
Relative density	:	1,26 at 30 °C (86 °F)
Density	:	1,26 G/ML
Water solubility	:	Miscible
Partition coefficient: n-octanol/water	:	log Pow: 0 at 20°C (68°F)
Viscosity, kinematic	:	No data available
Relative vapor density	:	3 (Air = 1.0)
Evaporation rate	:	1
Percent volatile	:	> 99 %

SECTION 10: Stability and reactivity

10.1

Reactivity : Stable under recommended storage conditions.

10.2

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.3

Possibility of hazardous reactions

Hazardous reactions : Hazardous reactions: Hazardous polymerization does not occur.

10.4

Conditions to avoid : No data available.

10.5

Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

10.6

Hazardous decomposition products : Carbon oxides
Sulfur oxides

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1

Information on toxicological effects

Acute oral toxicity

Sulfolane : LD50: 2.068 mg/kg
Species: Rat
Sex: male and female
Method: OECD Test Guideline 401

Acute inhalation toxicity

Sulfolane : LC50: > 12000 mg/m3Exposure time: 4 h
Species: Rat
Sex: male and female
Test atmosphere: vapor
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Acute dermal toxicity

Sulfolane	:	LD50: > 2.000 mg/kg Species: Rat Method: Directive 67/548/EEC, Annex V, B.3.

Skin irritation

Sulfolane	:	No skin irritation

Eye irritation

Sulfolane	:	No eye irritation

Sensitization

Sulfolane	:	Did not cause sensitization on laboratory animals.

Repeated dose toxicity

Sulfolane	:	Species: Rat, Male and female Sex: Male and female Application Route: Oral Dose: 60, 200, 700 mg/kg bw/day Exposure time: 28 days Number of exposures: Daily NOEL: 200 mg/kg bw/day Lowest observable effect level: 700 mg/kg bw/day

Species: Rat
Application Route: Inhalation
Dose: 2.8, 4.0, 20 mg/m3
Exposure time: 90-110 days
Number of exposures: 23 hrs/d, 7d/wk
NOEL: 20 mg/m3

Species: Guinea pig
Application Route: Inhalation
Dose: 4.0, 20, 159, 200 mg/m3
Exposure time: 90-110 days
Number of exposures: 23 hrs/d, 7 d/wk
NOEL: 159 mg/m3
Target Organs: Lungs, Blood, Liver

Species: Rat, male
Sex: male
Application Route: Oral diet
Dose: 2.1, 8.8, 35, 131.7 mg/kg/d
Exposure time: 13 wk
Number of exposures: Daily
NOEL: 8,8 mg/kg
Method: OECD Test Guideline 408
Target Organs: Kidney

Species: Rat, female
Sex: female
Application Route: Oral diet
Dose: 2.9, 10.6, 42, 191.1 mg/kg/d
Exposure time: 13 wk
Number of exposures: Daily
NOEL: 2,9 mg/kg
Method: OECD Test Guideline 408
Target Organs: Blood

Genotoxicity in vitro

Sulfolane : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

Test Type: Sister Chromatid Exchange Assay
Metabolic activation: with and without metabolic activation
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Mouse lymphoma assay
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 490
Result: negative

Reproductive toxicity

Sulfolane : Species: Rat
Sex: female
Application Route: oral gavage
Dose: 60, 200, 700 mg/kg
Number of exposures: Daily
Test period: 2 wk premating to lactation D4
Method: OECD Guideline 421
NOAEL Parent: 200 mg/kg bw/day
NOAEL F1: 60 mg/kg bw/day
Decrease birth index and number of pups

Developmental Toxicity

Sulfolane : Species: Rat
Application Route: oral gavage
Dose: 60, 200, 700 mg/kg
Number of exposures: Daily
Test period: 2 wk premating to lactation D4
NOAEL Teratogenicity: 60 mg/kg bw/day
NOAEL Maternal: 200 mg/kg bw/day

Species: Rat
Application Route: oral gavage
Dose: 100, 200, 500 mg/kg/day
Number of exposures: Daily
Test period: GD 1 - 19
NOAEL Teratogenicity: 200 mg/kg
NOAEL Maternal: 100 mg/kg
May damage the unborn child.

Sulfolane - A Anhydrous
Aspiration toxicity : No aspiration toxicity classification.

CMR effects

Sulfolane : Carcinogenicity: Not available
Mutagenicity: Tests on bacterial or mammalian cell cultures

did not show mutagenic effects.
Reproductive toxicity: Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

Sulfolane - A Anhydrous
Further information : No data available.

SECTION 12: Ecological information

12.1
Toxicity

Toxicity to fish

Sulfolane : LC50: > 100 mg/l
Exposure time: 96 h
Species: Oryzias latipes (Orange-red killifish)
static test Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates

Sulfolane : EC50: 852 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
static test Method: OECD Test Guideline 202

Toxicity to algae

Sulfolane : EC50: 500 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Method: OECD Test Guideline 201

NOEC: 171 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)
Method: OECD Test Guideline 201

12.2
Persistence and degradability

Biodegradability

Sulfolane : Result: Not readily biodegradable.
10,1 %
Testing period: 14 d
Method: OECD Test Guideline 301C

12.3
Bioaccumulative potential

Bioaccumulation

Sulfolane : Bioconcentration factor (BCF): < 1,3

This material is not expected to bioaccumulate.

12.4

Mobility in soil

Mobility

Sulfolane : No data available

12.5

Results of PBT and vPvB assessment

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

12.6

Other adverse effects

Additional ecological information : This material is not expected to be harmful to aquatic organisms.

Ecotoxicology Assessment

Short-term (acute) aquatic hazard : This material is not expected to be harmful to aquatic organisms.

Long-term (chronic) aquatic hazard : This material is not expected to be harmful to aquatic organisms.

SECTION 13: Disposal considerations

13.1

Waste treatment methods

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product : Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

SECTION 14: Transport information

14.1 - 14.7

Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping

description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information

15.1

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

Commission Regulation (EU) 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Water contaminating class (Germany) : WGK 2 water endangering

15.2

Chemical Safety Assessment

Components	:	tetrahydrothiophene 1,1-dioxide	A Chemical Safety Assessment has been carried out for this substance.	204-783-1

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Directive 96/82/EC does not apply

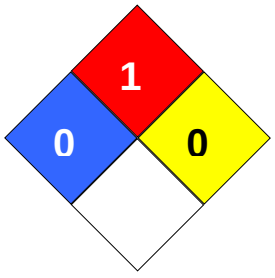
: ZEU_SEVES3 Update:
Not applicable

Notification status

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Other AIIC	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	All substances in this product were registered, notified to be registered, or exempted from registration by CPChem through an Only Representative according to K-REACH regulations. Importation of this product is permitted if the Korean Importer of Record was included on CPChem's notifications or if the Importer of Record themselves notified the substances.
Philippines PICCS	:	On the inventory, or in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 0
Fire Hazard: 1
Reactivity Hazard: 0



Further information

Legacy SDS Number : 34190

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a

guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet			
ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

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

H302	Harmful if swallowed.
H360	May damage fertility or the unborn child.

Annex

1. Short title of Exposure Scenario: **Use as an aromatics extraction solvent - industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU8, SU9:** Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **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 **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC1, ERC4, ERC6a:** Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)
Further information	:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities

2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC4, ERC6a: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)

Product characteristics

Viscosity, dynamic	:	10,34 mPa.s at 30 °C
(Msafe)	:	200 kg/day

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	:	300
Emission or Release Factor: Air	:	0,001 %
Emission or Release Factor: Water	:	1 %
Emission or Release Factor: Soil	:	0,01 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of

(%): (Effectiveness: > 90 %)
Remarks : Prevent environmental discharge consistent with regulatory requirements.
Water : No onsite wastewater treatment prior to discharge to sewage treatment plant.

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Percentage removed from waste water : 0 %
Procedures to limit air emissions from Sewage Treatment Plant : No data available
Remarks : Domestic sewage treatment is not assumed.

Conditions and measures related to external treatment of waste for disposal
Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC1, ERC4, ERC6a	EUSES		Freshwater		0,0893 mg/L	0,9
			Marine water		0,00894 mg/L	0,9
			Freshwater sediment		0,0764 mg/kg	0,9
			Marine sediment		0,00764 mg/kg	0,9
			Soil		0,00149 mg/kg	0,083

ERC1: Manufacture of substances
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)

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,70 ppm	0,4
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,77
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,30 ppm	0,2
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,26
PROC8a, CS39	ECETOC TRA		Worker – inhalation, long-term – systemic	0,21 ppm	0,1
			Worker – dermal, long-term – systemic	2,74 mg/kg/d	0,8
			Worker – long-term – systemic Combined routes		0,90
PROC8b, CS14, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,05 ppm	0,6
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,97

PROC1: Use in closed process, no likelihood of exposure
CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure
CS15: General exposures (closed systems)
CS67: Storage

PROC15: Use as laboratory reagent
CS36: Laboratory activities

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS14: Bulk transfers
CS39: Equipment cleaning and maintenance

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1Confirm that RMMs and OCs are as described or of equivalent efficiency.
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

1. Short title of Exposure Scenario: **Use in acid gas purification – industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU8, SU9:** Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **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 **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC1, ERC4, ERC6a:** Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)
Further information	:	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities

2.1 Contributing scenario controlling environmental exposure for:ERC1, ERC4, ERC6a: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use resulting in manufacture of another substance (use of intermediates)

Product characteristics

Viscosity, dynamic	:	10,34 mPa.s at 30 °C
(Msafe)	:	200 kg/day

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	:	300
Emission or Release Factor: Air	:	0,001 %
Emission or Release Factor: Water	:	1 %

Emission or Release Factor: Soil : 0,01 %

Technical conditions and measures / Organizational measures

Air : Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: > 90 %)

Remarks : Prevent environmental discharge consistent with regulatory requirements.

Water : No onsite wastewater treatment prior to discharge to sewage treatment plant.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Percentage removed from waste water : 0 %

Procedures to limit air emissions from Sewage Treatment Plant : No data available

Remarks : Domestic sewage treatment is not assumed.

Conditions and measures related to external treatment of waste for disposal

Waste treatment : External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery Methods : External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use as laboratory reagent

Product characteristics

Physical Form (at time of use) : Liquid substance

Vapor pressure : > 0,5 kPa

Amount used

Remarks : Not applicable

Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics

Physical Form (at time of use) : Liquid substance

Vapor pressure : > 0,5 kPa

Amount used

Remarks : Not applicable

Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures

Provide enhanced general ventilation by mechanical means.

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

Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and gloves (type EN374) if regular skin contact likely.

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics

Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used

Remarks : Not applicable

Frequency and duration of use

Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures

Provide enhanced general ventilation by mechanical means.

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

Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC1, ERC4, ERC6a	EUSES		Freshwater		0,0893 mg/L	0,9
			Marine water		0,00894 mg/L	0,9
			Freshwater sediment		0,0764 mg/kg	0,9
			Marine sediment		0,00764 mg/kg	0,9
			Soil		0,00149 mg/kg	0,083

ERC1: Manufacture of substances

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)

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15, CS67	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,70 ppm	0,4
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,77
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,30 ppm	0,2
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,26
PROC8a, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,21 ppm	0,1
			Worker – dermal, long-term – systemic	2,74 mg/kg/d	0,8
			Worker – long-term – systemic Combined routes		0,90
PROC8b, CS14, CS39	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,05 ppm	0,6
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,97

PROC1: Use in closed process, no likelihood of exposure
CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure
CS15: General exposures (closed systems)
CS67: Storage

PROC15: Use as laboratory reagent
CS36: Laboratory activities

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS39: Equipment cleaning and maintenance

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS14: Bulk transfers
CS39: Equipment cleaning and maintenance

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

1. Short title of Exposure Scenario: **Formulation**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU 10:** Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
Process category	:	**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 **:** PROC 5: 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) **PROC14:** Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting; **PROC15:** Use as laboratory reagent
Environmental release category	:	**ERC2:** Formulation of preparations
Further information	:	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for:ERC2: Formulation of preparations

Product characteristics

Viscosity, dynamic	:	10,34 mPa.s at 30 °C
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (tonnes/day): (Msafe)	:	
Remarks	:	Not applicable

Technical conditions and measures / Organizational measures
Remarks : Not applicable

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use as laboratory reagent

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

2.2 Contributing scenario controlling worker exposure for: PROC4, PROC8b, PROC9, PROC14: Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Production of mixtures or articles

by tabletting, compression, extrusion, pelletization; Industrial setting;

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

Organizational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Ensure material transfers are under containment or extract ventilation.

Organizational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 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

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,00 ppm	0,5
			Worker – dermal, long-term – systemic	1,34 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,93
PROC15, CS36	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,5 ppm	0,8
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,92
PROC3, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,59
PROC4, CS55	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC9, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC14, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,69
PROC8a, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,84 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined		0,85

			routes		

PROC1: Use in closed process, no likelihood of exposure
CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure
CS15: General exposures (closed systems)

PROC15: Use as laboratory reagent
CS36: Laboratory activities

PROC3: Use in closed batch process (synthesis or formulation)
CS15: General exposures (closed systems)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
CS55: Batch process

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS14: Bulk transfers

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
CS4: Dipping, immersion and pouring

PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;
CS4: Dipping, immersion and pouring

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS14: Bulk transfers

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1

1. Short title of Exposure Scenario: **Use as a cleaning agent – industrial**

Main User Groups	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Sector of use	:	**SU 3:** Industrial uses: Uses of substances as such or in preparations at industrial sites
Process category	:	**PROC1:** Use in closed process, no likelihood of exposure **PROC2:** Use in closed, continuous process with occasional controlled exposure **PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises **PROC7:** Industrial spraying **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

		PROC10: Roller application or brushing **PROC13:** Treatment of articles by dipping and pouring
Environmental release category	:	**ERC4:** Industrial use of processing aids in processes and products, not becoming part of articles
Further information	:	Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. Exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

2.1 Contributing scenario controlling environmental exposure for:ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Product characteristics

Viscosity, dynamic	:	10,34 mPa.s at 30 °C
(Msafe)	:	396 kg/day

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	:	300
Emission or Release Factor: Air	:	30 %
Emission or Release Factor: Water	:	0,01 %
Emission or Release Factor: Soil	:	0 %

Technical conditions and measures / Organizational measures

Air	:	Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: > 70 %)
Remarks	:	Prevent environmental discharge consistent with regulatory requirements.
Water	:	No onsite wastewater treatment prior to discharge to sewage treatment plant.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant	:	Municipal sewage treatment plant
Percentage removed from waste water	:	0 %
Procedures to limit air emissions from Sewage Treatment Plant	:	No data available
Remarks	:	Domestic sewage treatment is not assumed.

Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

Recovery Methods	:	External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.

2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

Organizational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 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.

2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

Product characteristics
Physical Form (at time of use) : Liquid substance

Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Ensure material transfers are under containment or extract ventilation.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Wear a full face respirator conforming to EN140 with Type A filter or better.

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Provide enhanced general ventilation by mechanical means.

Organizational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374.

2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC10, PROC13: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Roller application or brushing, Treatment of articles by dipping and pouring

Product characteristics
Physical Form (at time of use) : Liquid substance
Vapor pressure : > 0,5 kPa

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting workers exposure
Remarks : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Ensure material transfers are under containment or extract ventilation.

Organizational measures to prevent /limit releases, dispersion and exposure
Avoid carrying out operation for more than 4 hours.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	Risk characterization ratio
ERC4	EUSES		Freshwater		0,00137 mg/L	0,014
			Marine water		0,000136 mg/L	0,014
			Freshwater sediment		0,00117 mg/kg	0,014
			Marine sediment		0,000116 mg/kg	0,014
			Soil		0,00794 mg/kg	0,45

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	Risk characterization ratio
PROC1, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,01 ppm	0,0
			Worker – dermal, long-term – systemic	0,34 mg/kg/d	0,1
			Worker – long-term – systemic Combined routes		0,10
PROC2, CS15	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,00 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined		0,94

			routes		
PROC4, CS55	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,69
PROC7, CS10	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,60 ppm	0,3
			Worker – dermal, long-term – systemic	2,14 mg/kg/d	0,6
			Worker – long-term – systemic Combined routes		0,94
PROC8b, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,90 ppm	0,5
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,88
PROC8a, CS14	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,20 ppm	0,7
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,85
PROC10, CS51	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	0,60 ppm	0,3
			Worker – dermal, long-term – systemic	1,37 mg/kg/d	0,4
			Worker – long-term – systemic Combined routes		0,72
PROC13, CS4	ECETOC TRA Modified		Worker – inhalation, long-term – systemic	1,20 ppm	0,7
			Worker – dermal, long-term – systemic	0,69 mg/kg/d	0,2
			Worker – long-term – systemic Combined routes		0,85

PROC1: Use in closed process, no likelihood of exposure
CS15: General exposures (closed systems)

PROC2: Use in closed, continuous process with occasional controlled exposure
CS15: General exposures (closed systems)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
CS55: Batch process

PROC7: Industrial spraying
CS10: Spraying

PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities
CS14: Bulk transfers

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
CS14: Bulk transfers

PROC10: Roller application or brushing
CS51: Rolling, Brushing

PROC13: Treatment of articles by dipping and pouring

CS4: Dipping, immersion and pouring

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

Confirm that RMMs and OCs are as described or of equivalent efficiency.
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1