

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 use	s advised against
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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

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Email:sds@cpchem.com

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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

Reproductive toxicity, Category 1B

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

2.2

Labeling (REGULATION (EC) No 1272/2008)

Signal Word : Danger		Hazard pictograms	:		!>
	2	Signal Word	:	Danger	
Hazard Statements: H302 H360Harmful if swallowed. May damage fertility or the unborn child.		Hazard Statements	:		
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.		Precautionary Statements	:	P201 P202 P264 P280	Do not handle until all safety precautions have been read and understood. Wash skin thoroughly after handling. Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing
Response: P308 + P313 IF exposed or concerned: Get medical advice/ attention. Disposal:				P308 + P313	•
P501 Dispose of contents/ container to an approved waste disposal plant.				•	•
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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 - <mark>3.2</mark> Substane

ubstance or Mixture		
Synonyms	:	Tetramethylene Sulfone Sulfolane Anhydrous Tetrahydrothiophene 1,1-dioxide

Molecular formula : C4H8SO2

Hazardous ingredients

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

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		ove out of dangerous area. Show this material safety data neet to the doctor in attendance.
If inhaled		unconscious, place in recovery position and seek medical dvice. If symptoms persist, call a physician.
In case of eye contact	le	ush eyes with water as a precaution. Remove contact nses. Protect unharmed eye. Keep eye wide open while nsing. If eye irritation persists, consult a specialist.
If swallowed	b p	eep respiratory tract clear. Do not give milk or alcoholic everages. Never give anything by mouth to an unconscious erson. If symptoms persist, call a physician. Take victim mediately to hospital.
SECTION 5: Firefighting meas	ures	

Flash point	:	166°C (331°F) Method: closed cup	
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	Autoignition temperature	:	No data available
5.1	Extinguishing media		
	Unsuitable extinguishing media	:	High volume water jet.
5.2	Special hazards arising from Specific hazards during fire fighting		he substance or mixture 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.
SEC	CTION 6: Accidental release m	nea	asures
6.1	Personal precautions, prote	cti	ve 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 control Methods for cleaning up	on :	tainment and 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.
SEC	CTION 7: Handling and storag	е	
7.1	Precautions for safe handlin	a	
	Treeducions for sale nandim	9	

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	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 storag	e, in	cluding 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

Components	Basis	Value	Control parameters	Note
Sulfolane	Manufacturer	TWA	0,37 ppm,	
DNEL	Rou Pot	d Use: Workers utes of exposure: D ential health effects ue: 0,2 mg/kg	ermal :: Long-term systemic el	fects
DNEL	Roi Pot	d Use: Workers utes of exposure: In ential health effects ue: 2,16 mg/m3	halation :: Long-term systemic el	fects
DNEL	Rou Pot	d Use: Consumers utes of exposure: D ential health effects ue: 0,015 mg/kg	ermal :: Long-term systemic el	fects
DNEL	Rou Pot	d Use: Consumers utes of exposure: In ential health effects ue: 0,3 mg/m3	halation :: Long-term systemic et	fects
PNEC	-	sh water ue: 0,1 mg/l		
PNEC		rine water ue: 0,01 mg/l		
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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 che	nical properties	
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Form: liquidPhysical state: liquidColor: ClearOdor: MildSafety dataFlash point: 166°C (331°F) Method: closed cupLower explosion limit: No data availableUpper explosion limit: No data availableOxidizing properties: NoAutoignition temperature: No data availableMolecular formula: C4H8SO2Molecular weight: 120,18 g/molPH: Ster C (79°F)Pour point: 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)
Flash point: 166°C (331°F) Method: closed cupLower explosion limit: No data availableUpper explosion limit: No data availableOxidizing properties: NoAutoignition temperature: No data availableMolecular formula: C4H8SO2Molecular weight: 120,18 g/molpH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Method: closed cupLower explosion limit: No data availableUpper explosion limit: No data availableOxidizing properties: NoAutoignition temperature: No data availableMolecular formula: C4H8SO2Molecular weight: 120,18 g/molpH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Upper explosion limit: No data availableOxidizing properties: NoAutoignition temperature: No data availableMolecular formula: C4H8SO2Molecular weight: 120,18 g/molpH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Oxidizing properties:NoAutoignition temperature:No data availableMolecular formula:C4H8SO2Molecular weight:120,18 g/molpH:Not applicableFreezing point:26°C (79°F)Pour pointNo data availableBoiling 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
Autoignition temperature: No data availableMolecular formula: C4H8SO2Molecular weight: 120,18 g/molpH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Molecular formula: C4H8SO2Molecular weight: 120,18 g/molpH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Molecular weight: 120,18 g/molpH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
pH: Not applicableFreezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Freezing point: 26°C (79°F)Pour pointNo data availableBoiling 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
Pour pointNo data availableBoiling 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
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
Vapor pressure : 1,14 MMHG at 37,8°C (100,0°F) Relative density : 1,26
at 37,8°C (100,0°F) Relative density : 1,26
Density : 1,26 G/ML
Water solubility : Miscible
Partition coefficient: n-: log Pow: 0octanol/waterat 20°C (68°F)
Viscosity, kinematic : No data available
Relative vapor density : 3 (Air = 1.0)
Evaporation rate : 1
Percent volatile : > 99 %

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SECTION 10: Stability and react	ivity
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 rea	actions
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	: Carbon oxides
products	Sulfur oxides
Other data	: No decomposition if stored and applied as directed.
SECTION 11: Toxicological infor	rmation
11.1 Information on toxicologica	Il 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	An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable

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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

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	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

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	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
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	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	n
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	
Bioaccumulative potential Bioaccumulation	
	Bioconcentration factor (BCF): < 1,3
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	This material is not expected to bioaccumulate.
2.4	
Mobility in soil	
Mobility	
Sulfolane	: No data available
2.5	
Results of PBT and vPvB as Results of PBT assessment	 ssessment 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.
2.6	
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.
ECTION 13: Disposal consider	ations
3.1 Waste treatment methods	ations pertains only to the product as shipped.
3.1 Waste treatment methods The information in this SDS p Use material for its intended p may meet the criteria of a haz other State and local regulation regulated components may b	
3.1 Waste treatment methods The information in this SDS p Use material for its intended p may meet the criteria of a haz other State and local regulation regulated components may b classified as a hazardous was	pertains only to the product as shipped. purpose or recycle if possible. This material, if it must be discarded, zardous waste as defined by US EPA under RCRA (40 CFR 261) or ons. Measurement of certain physical properties and analysis for e necessary to make a correct determination. If this material is
The information in this SDS p Use material for its intended p may meet the criteria of a haz other State and local regulation regulated components may b classified as a hazardous was disposal facility.	 bertains only to the product as shipped. purpose or recycle if possible. This material, if it must be discarded, zardous waste as defined by US EPA under RCRA (40 CFR 261) or ons. Measurement of certain physical properties and analysis for e necessary to make a correct determination. If this material is ste, federal law requires disposal at a licensed hazardous waste Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container.
3.1 Waste treatment methods The information in this SDS p Use material for its intended p may meet the criteria of a haz other State and local regulatio regulated components may b classified as a hazardous was disposal facility. Product	 bertains only to the product as shipped. purpose or recycle if possible. This material, if it must be discarded, zardous waste as defined by US EPA under RCRA (40 CFR 261) or ons. Measurement of certain physical properties and analysis for e necessary to make a correct determination. If this material is ste, federal law requires disposal at a licensed hazardous waste 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. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.
 3.1 Waste treatment methods The information in this SDS p Use material for its intended p may meet the criteria of a haz other State and local regulation regulated components may b classified as a hazardous was disposal facility. Product Contaminated packaging ECTION 14: Transport information Transport information The shipping descriptions s 	 bertains only to the product as shipped. purpose or recycle if possible. This material, if it must be discarded, zardous waste as defined by US EPA under RCRA (40 CFR 261) or ons. Measurement of certain physical properties and analysis for e necessary to make a correct determination. If this material is ste, federal law requires disposal at a licensed hazardous waste 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. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.
 3.1 Waste treatment methods The information in this SDS p Use material for its intended p may meet the criteria of a haz other State and local regulation regulated components may b classified as a hazardous was disposal facility. Product ECTION 14: Transport information The shipping descriptions s shipments in non-bulk pack Consult the appropriate dome Goods Regulations for addition 	 bertains only to the product as shipped. bertains only to the product as shipped. bertains on recycle if possible. This material, if it must be discarded, zardous waste as defined by US EPA under RCRA (40 CFR 261) or ons. Measurement of certain physical properties and analysis for e necessary to make a correct determination. If this material is ste, federal law requires disposal at a licensed hazardous waste Co 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. Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

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description for the material. Flashpoints for the material may van bill of lading.	ry slightly between the SDS and the
US DOT (UNITED STATES DEPARTMENT OF TRANSPORTA NOT REGULATED AS A HAZARDOUS MATERIAL OR DAN TRANSPORTATION BY THIS AGENCY.	
IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOO NOT REGULATED AS A HAZARDOUS MATERIAL OR DAN TRANSPORTATION BY THIS AGENCY.	
IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION) NOT REGULATED AS A HAZARDOUS MATERIAL OR DAN TRANSPORTATION BY THIS AGENCY.	IGEROUS GOODS FOR
ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EU NOT REGULATED AS A HAZARDOUS MATERIAL OR DAN TRANSPORTATION BY THIS AGENCY.	
RID (REGULATIONS CONCERNING THE INTERNATIONAL T DANGEROUS GOODS (EUROPE)) NOT REGULATED AS A HAZARDOUS MATERIAL OR DAN TRANSPORTATION BY THIS AGENCY.	
ADN (EUROPEAN AGREEMENT CONCERNING THE INTERN OF DANGEROUS GOODS BY INLAND WATERWAYS) NOT REGULATED AS A HAZARDOUS MATERIAL OR DAN TRANSPORTATION BY THIS AGENCY.	
Maritime transport in bulk according to IMO instruments	
5.1 Safety, health and environmental regulations/legislation spe	ecific for the substance or mixture
National legislation Commission Regulation (EU) 2015/830 of 28 May 2015 amendir the European Parliament and of the Council on the Registration, Restriction of Chemicals (REACH)	ng Regulation (EC) No 1907/2006 of
Water contaminating class : WGK 2 water endangering (Germany)	
5.2	

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Components : tetrahy e 1,1-d	drothiophen ioxide	A Chemical Safety Assessment 204-7 has been carried out for this substance.	83-1
	96/82/EC Directive 96/8	Update: 2003 32/EC does not apply	
	ZEU_SEVES Not applicabl		
Notification status Europe REACH Switzerland CH INV United States of America (USA) TSCA Canada DSL Other AIIC New Zealand NZIoC Japan ENCS Korea KECI	regula : On the : On or TSCA : All cor DSL : On the : On the : On the : All sub to be r CPCh K-REA permit includ	roduct is in full compliance according to RE tion 1907/2006/EC. e inventory, or in compliance with the inven in compliance with the active portion of the inventory mponents of this product are on the Canadi e inventory, or in compliance with the inven e inventory, or in compliance with the inven be inventory, or in compliance with the inven e inventory, or in compliance with the inven bestances in this product were registered, no registered, or exempted from registration by em through an Only Representative accord ACH regulations. Importation of this product ted if the Korean Importer of Record was ed on CPChem's notifications or if the Import d themselves notified the substances.	tory ian tory tory tory otified y ding to ct is
Philippines PICCS Taiwan TCSI China IECSC	: On the : On the	e inventory, or in compliance with the inven e inventory, or in compliance with the inven e inventory, or in compliance with the inven	itory
TION 16: Other information			
F	ealth Hazard ire Hazard: 1 eactivity Haz		0
Further information		\checkmark	
Legacy SDS Number : 3	4190		
previous versions. The information in this SDS pertain	ns only to the	ghlighted in the margin. This version replac product as shipped. eet is correct to the best of our knowledge,	
information and belief at the date of		on. The information given is designed only	
Number:100000014122		15/35	

Sulfolane - A Anhydrous

Version 3.5

Revision Date 2021-09-15

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.

ŀ	Key or legend to abbreviations and a	cronyms use	d 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.

Version 3.5

Annex

1. Short title of Exposure Scenario: Us	
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
Process estagery	(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
	,
	,
	Iling environmental exposure for:ERC1, ERC4, ERC6a:
Manufacture of substances, Indu	Iling environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and
Manufacture of substances, Indu products, not becoming part of a	Iling environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern	Iling environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern	Iling environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics	Iling environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of nediates)
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic	Iling environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C : 200 kg/day by risk management
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C : 200 kg/day by risk management : 18.000 m3/d
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River)	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C : 200 kg/day by risk management : 18.000 m3/d : 10
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C : 200 kg/day by risk management : 18.000 m3/d : 10
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River)	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C : 200 kg/day by risk management : 18.000 m3/d : 10 : 100
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) : 10,34 mPa.s at 30 °C : 200 kg/day by risk management : 18.000 m3/d : 10 : 100 affecting environmental exposure
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions	 Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) 10,34 mPa.s at 30 °C 200 kg/day by risk management 18.000 m3/d 10 100 affecting environmental exposure 300
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions	 Illing environmental exposure for:ERC1, ERC4, ERC6a: Instrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) 10,34 mPa.s at 30 °C 200 kg/day by risk management 18.000 m3/d 10 100 affecting environmental exposure 300 0,001 %
 Manufacture of substances, Induproducts, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions a Number of emission days per year Emission or Release Factor: Air 	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of nediates) 10,34 mPa.s at 30 °C 200 kg/day by risk management 18.000 m3/d 10 affecting environmental exposure 300 0,001 % 1 %
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions Number of emission days per year Emission or Release Factor: Air Emission or Release Factor: Water Emission or Release Factor: Soil	 Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) 10,34 mPa.s at 30 °C 200 kg/day by risk management 18.000 m3/d 10 affecting environmental exposure 300 0,001 % 1 % 0,01 %
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions Number of emission days per year Emission or Release Factor: Air Emission or Release Factor: Water	 Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of mediates) 10,34 mPa.s at 30 °C 200 kg/day by risk management 18.000 m3/d 10 affecting environmental exposure 300 0,001 % 1 % 0,01 %
Manufacture of substances, Indu products, not becoming part of a another substance (use of intern Product characteristics Viscosity, dynamic (Msafe) Environment factors not influenced Flow rate Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions Number of emission days per year Emission or Release Factor: Air Emission or Release Factor: Water Emission or Release Factor: Soil	Illing environmental exposure for:ERC1, ERC4, ERC6a: Istrial use of processing aids in processes and articles, Industrial use resulting in manufacture of nediates) 10,34 mPa.s at 30 °C 200 kg/day by risk management 18.000 m3/d 10 100 affecting environmental exposure 300 0,001 % 1 % 0,01 % / Organizational measures

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Remarks Water	 (%): (Effectiveness: > 90 %) Prevent environmental discharge consistent with regulatory requirements. No onsite wastewater treatment prior to discharge to sewage
	treatment plant.
Conditions and measures related to Type of Sewage Treatment Plant Percentage removed from waste water	 municipal sewage treatment plant Municipal sewage treatment plant 0 %
Procedures to limit air emissions from Sewage Treatment Plant Remarks	No data availableDomestic sewage treatment is not assumed.
	-
Conditions and measures related to Waste treatment Conditions and measures related to	 external treatment of waste for disposal External treatment and disposal of waste should comply with applicable local and/or national regulations.
Recovery Methods	: External recovery and recycling of waste should comply with applicable local and/or national regulations.
Use in closed process, no likelil	olling worker exposure for: PROC1, PROC2, PROC15: hood of exposure, Use in closed, continuous process osure, Use as laboratory reagent
Product characteristics Physical Form (at time of use) Vapor pressure	: Liquid substance : > 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 affect Remarks	 ing workers exposure Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.
	olling worker exposure for: PROC8a: Transfer of ging/discharging) from/to vessels/large containers at
Product characteristics Physical Form (at time of use) Vapor pressure	: Liquid substance : > 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 affect	ing workers exposure

Sundiane	_ A Anhudra				SAFET	Y DATA SHEI
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Remarks			implemented., A	d basic standard Assumes use at r ature, unless sta	of occupation	al hygiene is 20°C above
Provide enhar	ditions and meas nced general venti	ures lation by	mechanical mea	ans.		
Wear suitable	d measures relate e respiratory protec ular skin contact lil	tion (cont				
	ing scenario co preparation (cl cilities					
Product chara Physical Forr Vapor pressu	m (at time of use)		Liquid substanc > 0,5 kPa	e		
Amount used Remarks		:	Not applicable			
Frequency and Remarks	d duration of use		Covers daily ex differently)	posures up to 8 ł	hours (unless s	stated
Other operatio Remarks	onal conditions af	:	Assumes a goo implemented., A	ure d basic standard Assumes use at r ature, unless sta	not more than 2	20°C above
	ditions and meas	lation by			1 1/1 1	
Conditions on			Sonai protectio	n, nygiene and	nealth evalua	
Wear suitable	estimation and		e to its sourc	e		
Wear suitable 3. Exposure e	e gloves tested to E		e to its sourc	e		
Wear suitable 3. Exposure e	e gloves tested to E		c Compartn		Level of Exposure	Risk characterizatior ratio
Wear suitable B. Exposure e Environment Contributing	e gloves tested to E estimation and Exposure Assessment	referenc Specifi	c Compartn	nent Value type		characterization
Wear suitable 3. Exposure e Environment Contributing Scenario ERC1, ERC4,	e gloves tested to E estimation and Exposure Assessment Method	referenc Specifi	c Compartn ns Freshwa Marine w Freshwa	ter ter ter	Exposure	characterization ratio
Wear suitable 3. Exposure e Environment Contributing Scenario ERC1, ERC4,	Exposure Assessment Method	referenc Specifi	c Compartn ns Freshwa Marine w	ter ter nt	Exposure 0,0893 mg/L 0,00894 mg/L 0,0764 mg/kg 0,00764	characterization ratio 0,9 0,9
Wear suitable 3. Exposure e Environment Contributing Scenario ERC1, ERC4,	Exposure Assessment Method	referenc Specifi	c Compartn ns Freshwa Marine w Freshwa sedime	ter ter nt	Exposure 0,0893 mg/L 0,00894 mg/L 0,0764 mg/kg 0,00764 mg/kg 0,00149	characterization ratio 0,9 0,9 0,9
3. Exposure e Environment Contributing Scenario ERC1, ERC4, ERC6a ERC1: Manu ERC4: Indus	Exposure Assessment Method	Specifi condition	c Compartn ns Freshwa Marine w Freshwa sedime Marine sed Soil	nent Value type ter ater ter nt iment iment d products, not b	Exposure 0,0893 mg/L 0,00894 mg/L 0,0764 mg/kg 0,00764 mg/kg 0,00149 mg/kg	characterization ratio 0,9 0,9 0,9 0,083 of articles
Wear suitable 3. Exposure e Environment Contributing Scenario ERC1, ERC4, ERC6a ERC1: Manu ERC4: Indus	Exposure Assessment Method EUSES facture of substan trial use of proces strial use resulting	Specifi condition	c Compartn ns Freshwa Marine w Freshwa sedime Marine sed Soil	nent Value type ter ater ter nt iment iment d products, not b	Exposure 0,0893 mg/L 0,00894 mg/L 0,0764 mg/kg 0,00764 mg/kg 0,00149 mg/kg	characterization ratio 0,9 0,9 0,9 0,083 of articles

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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

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

CSS9. 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

SDS Number:100000014122

SAFETY DATA SHEET Sulfolane - A Anhydrous Version 3.5 Revision Date 2021-09-15 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 SU8, SU9: Manufacture of bulk, large scale chemicals Sector of use (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 1 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 : 200 kg/day (Msafe) Environment factors not influenced by risk management Flow rate : 18.000 m3/d : 10 Dilution Factor (River) 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 % SDS Number:100000014122 21/35

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Emission or Release Factor: Soil	: 0,01 %
Technical conditions and measures	s / Organizational measures
Air	 Treat air emission to provide a typical removal efficiency of (%): (Effectiveness: > 90 %)
Remarks	: Prevent environmental discharge consistent with regulatory
Water	requirements.No onsite wastewater treatment prior to discharge to sewage treatment plant.
Conditions and measures related to	o municipal sewage treatment plant
Type of Sewage Treatment Plant Percentage removed from waste water	Municipal sewage treatment plant0 %
Procedures to limit air emissions from Sewage Treatment Plant	: No data available
Remarks	: Domestic sewage treatment is not assumed.
Conditions and measures related to Waste treatment	 o external treatment of waste for disposal External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to Recovery Methods	
Use in closed process, no likelil with occasional controlled expo	olling worker exposure for: PROC1, PROC2, PROC15: hood of exposure, Use in closed, continuous process osure, Use as laboratory reagent
Use in closed process, no likelil with occasional controlled expo	hood of exposure, Use in closed, continuous process
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure	hood of exposure, Use in closed, continuous process osure, Use as laboratory reagent : Liquid substance
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used Remarks	hood of exposure, Use in closed, continuous process osure, Use as laboratory reagent : Liquid substance : > 0,5 kPa
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used	hood of exposure, Use in closed, continuous process osure, Use as laboratory reagent : Liquid substance : > 0,5 kPa
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use	 hood of exposure, Use in closed, continuous process baure, Use as laboratory reagent Liquid substance > 0,5 kPa Not applicable Covers daily exposures up to 8 hours (unless stated differently)
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use Remarks Other operational conditions affect Remarks 2.2 Contributing scenario contro substance or preparation (charg	 hood of exposure, Use in closed, continuous process baure, Use as laboratory reagent Liquid substance > 0,5 kPa Not applicable Covers daily exposures up to 8 hours (unless stated differently) ting workers exposure Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use Remarks Other operational conditions affect Remarks 2.2 Contributing scenario contro substance or preparation (charge non-dedicated facilities	 bood of exposure, Use in closed, continuous process baure, Use as laboratory reagent Liquid substance > 0,5 kPa Not applicable Covers daily exposures up to 8 hours (unless stated differently) ting workers exposure Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use Remarks Other operational conditions affect Remarks 2.2 Contributing scenario contro substance or preparation (charge non-dedicated facilities Product characteristics Physical Form (at time of use)	 bood of exposure, Use in closed, continuous process boure, Use as laboratory reagent Liquid substance > 0,5 kPa Not applicable Covers daily exposures up to 8 hours (unless stated differently) ting workers exposure Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Use in closed process, no likelil with occasional controlled expo Product characteristics Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use Remarks Other operational conditions affect Remarks 2.2 Contributing scenario contro substance or preparation (charge non-dedicated facilities Product characteristics Physical Form (at time of use) Vapor pressure Amount used	 bood of exposure, Use in closed, continuous process boure, Use as laboratory reagent Liquid substance > 0,5 kPa Not applicable Covers daily exposures up to 8 hours (unless stated differently) ting workers exposure Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently. tolling worker exposure for: PROC8a: Transfer of ging/discharging) from/to vessels/large containers at Liquid substance > 0,5 kPa

Version 3.5 Revision Date Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting workers exposure Remarks Remarks : Assumes a good basic standard of occupational hy implemented. Assumes use at not more than 20°C 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 g EN374) if regular skin contact likely. 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer c substance or preparation (charging/ discharging) from/ to vessels/ large contail dedicated facilities Product characteristics Physical Form (at time of use) : Liquid substance Vapor pressure :> 0.5 kPa Amount used : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting workers exposure : Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting worker exposure : Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting worker exposure : Remarks : Covers daily exposures up to 8 hours (unless state differently)	DATA SHEET	SAFETY I			JS	- A Anhydro	Sulfolane -	
differently) differently) Other operational conditions affecting workers exposure Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C 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 g EN374) if regular skin contact likely. 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer c substance or preparation (charging/ discharging) from/ to vessels/ large contaidedicated facilities Product characteristics Physical Form (at time of use) : Liquid substance Vapor pressure :> 0,5 kPa Amount used Remarks : Not applicable Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting workers exposure ambient temperature, unless stated differently. Other operational conditions affecting workers exposure assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C ambient temperature, unless stated differently. Other operational conditions affecting workers exposure Maine water 0.00004 ambient temperature, unless stated differently. Technical conditions and measures <td>ate 2021-09-15</td> <td>Revision Dat</td> <td></td> <td></td> <td></td> <td>·····</td> <td></td>	ate 2021-09-15	Revision Dat				···· ·		
Remarks Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C 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 g EN374) if regular skin contact likely. 22. Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large contait dedicated facilities Product characteristics Physical Form (at time of use) : Liquid substance Yapor pressure :> 0.5 kPa Amount used Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting worker sexposure : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C arrbitent temperature, unless stated differently. Technical conditions and measures : Assumes a good basic standard of occupational hy implemented., Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C arrbitent temperature, unless stated differently. Technical conditions and measures : Assumes a good basic standard of occupational hy implemented., Assumes as ustable gloves tested to EN374. 3. Exposure estimation and reference to its source :	ated							
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 general ventilation by morker exposure for: PROC8b: Transfer or 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer or substance or preparation (charging/ discharging) from/ to vessels/ large contaidedicated 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 state differently) Other operational conditions affecting workers exposure Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C 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. B. Exposure estimation and reference to its source Environment Contributing Exposure <td></td> <td colspan="6">Remarks : Assumes a good basic standard of occupational hygiene implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.</td>		Remarks : Assumes a good basic standard of occupational hygiene implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.						
Wear suitable respiratory protection (conforming to EN140 with Type A filter or better) and g EN374) if regular skin contact likely. 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer c substance or preparation (charging/ discharging) from/ to vessels/ large contained dedicated facilities Product characteristics Physical Form (at time of use) : Liquid substance Vapor pressure :> 0,5 kPa Amount used Remarks Remarks : Not applicable Frequency and duration of use Remarks Remarks : Covers daily exposures up to 8 hours (unless state differently) Dther operational conditions affecting workers exposure Remarks Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C ambient temperature, unless stated differently. Fechnical conditions and measures Provide enhanced general ventilation by mechanical means. Conditions and measures related to personal protection, hygiene and health evaluatior Wear suitable gloves tested to EN374. B. Exposure estimation and reference to its source Environment Contributing Exposure Specific conditions Compartment Value type Level of Exposure on the sediment ERC6a Marine water 0,00894 mg/L				anical means.				
substance or preparation (charging/discharging) from/ to vessels/ large contail dedicated facilities Product characteristics Physical Form (at time of use) : Liquid substance Vapor pressure : > 0,5 kPa Amount used Remarks Remarks : Not applicable Frequency and duration of use Remarks Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting workers exposure Remarks Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C 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 Assessment conditions Compartment Value type Level of Exposure on the evaluation of segment 0,0084 mg/L ERC6a Marine water 0,0084 mg/L Amine sediment 0,00744 mg/kg					tion (conformi	respiratory protect	Wear suitable	
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 state differently) Other operational conditions affecting workers exposure Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C ambient temperature, unless stated differently. Provide enhanced general ventillation by mechanical means. Conditions and measures Provide enhanced general ventillation by mechanical means. Conditions and measures related to personal protection, hygiene and health evaluation Wear suitable gloves tested to EN374. B. Exposure estimation and reference to its source Environment Contributing Scenario Exposure Specific conditions Compartment Value type Level of Exposure draw of the sediment cha draw of the sediment ERC1, ERC4, EUSES Freshwater 0,00894 mg/L cha draw of the sediment 0,00764 mg/kg ERC6a EUSES Freshwater 0,00764 mg/kg mg/kg g/kg						preparation (c	substance or	
Remarks : Not applicable Frequency and duration of use Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting workers exposure Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C ambient temperature, unless stated differently. Fechnical 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. B. Exposure estimation and reference to its source Environment Contributing Exposure Assessment Method Contributing Exposure Assessment Method Compartment Value type Level of Exposure Environment 0,00894 mg/L Compartment 0,00894 mg/L Environ Marine water 0,00764 mg/kg Marine sediment mg/kg						m (at time of use)	Physical Form	
Remarks : Covers daily exposures up to 8 hours (unless state differently) Other operational conditions affecting workers exposure Remarks Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C ambient temperature, unless stated differently. Fechnical 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. B. Exposure estimation and reference to its source Environment Contributing Exposure conditions Assessment Method Specific conditions ERC1, ERC4, EUSES Freshwater 0,0893 mg/L ERC6a Marine water 0,00894 mg/L Marine sediment Marine sediment 0,00764 mg/kg Marine sediment 0,00149 mg/kg Marine sediment				pplicable	: Not a			
Remarks : Assumes a good basic standard of occupational hy implemented., Assumes use at not more than 20°C ambient temperature, unless stated differently. Fechnical 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. B. Exposure estimation and reference to its source Environment Contributing Exposure Assessment Conditions Method Freshwater ERC1, ERC4, EUSES Freshwater ERC6a Uses Method Freshwater Marine water 0,00894 mg/L Order mark Marine sediment Marine sediment 0,00764 Marine Soil 0,00149 Marine Soil 0,00149	ated	Remarks : Covers daily exposures up to 8 hours (unless stated						
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 Exposure Specific conditions Compartment Value type Level of Exposure estimation and reference to its source character conditions Compartment Value type Level of Exposure character conditions Preshwater ERC1, ERC4, EUSES Freshwater 0,0893 mg/L ERC6a EUSES Freshwater 0,00894 mg/L Contributing Sediment 0,00764 mg/kg Conditions Soil 0,00149 Marine sediment mg/kg Conditions Soil 0,00149 Condition		ot more than 20°	ies use at n	mes a good bas mented., Assum	: Assu imple	nal conditions a	-	
Wear suitable gloves tested to EN374. B. Exposure estimation and reference to its source Environment Contributing Scenario Exposure Assessment Method Specific conditions Compartment Compartment Value type Level of Exposure chain ERC1, ERC4, ERC6a EUSES Freshwater 0,0893 mg/L chain Marine water 0,00894 mg/L Sediment 0,00764 mg/kg Marine sediment 0,00764 mg/kg mg/kg Soil 0,00149 mg/kg				anical means.				
Environment Contributing Scenario Exposure Assessment Method Specific conditions Compartment Compartment Value type Level of Exposure cha ERC1, ERC4, ERC6a EUSES Freshwater 0,0893 mg/L cha Marine water 0,00894 mg/L Freshwater 0,00764 mg/kg cha Marine sediment Marine sediment 0,00764 mg/kg cha Marine sediment Soil 0,00149 mg/kg mg/kg	on	health evaluatic	giene and	I protection, hy	•			
Contributing ScenarioExposure Assessment MethodSpecific conditionsCompartment Value typeLevel of ExposurechaERC1, ERC4, ERC6aEUSESFreshwater0,0893 mg/LchaImage: Second conditionsMarine water0,00894 mg/LImage: Second conditionsImage: Second conditionsImage: Second conditionsMarine second conditionsMarine second conditions0,00764 mg/kgImage: Second conditionsImage: Second conditionsMarine second conditionsMarine second conditions0,00764 mg/kgImage: Second conditionsSoil0,00149 mg/kgImage: Second conditions				its source	eference to	estimation and	3. Exposure e	
Scenario Assessment Method conditions Image: Conditions Exposure char char ERC1, ERC4, ERC6a EUSES Freshwater 0,0893 mg/L - Image: Char Marine water 0,00894 mg/L - Image: Char Marine water 0,00764 mg/kg - Image: Char Marine sediment 0,00764 mg/kg - Image: Char Marine sediment 0,00764 mg/kg - Image: Char Soil 0,00149 mg/kg -							Environment	
ERC6a Marine water 0,00894 mg/L Image: Marine water sediment 0,0764 mg/kg Image: Marine sediment 0,00764 mg/kg Image: Marine sediment 0,00764 mg/kg Image: Marine sediment 0,00149 mg/kg	Risk characterization ratio		Value type	Compartment		Assessment	•	
Marine water 0,00894 mg/L Freshwater 0,0764 mg/kg sediment 0,00764 mg/kg Marine sediment 0,00764 mg/kg Soil 0,00149 mg/kg	0,9	0,0893 mg/L		Freshwater		EUSES		
sediment 0,00764 mg/kg Soil 0,00149 mg/kg	0,9							
mg/kg Soil 0,00149 mg/kg	0,9	0,0764 mg/kg						
Soil 0,00149 mg/kg	0,9	'		Marine sediment				
FDO4. Manufacture of exhibiting a	0,083	0,00149		Soil				
ERC1: Manufacture of substances					es	facture of substar	ERC1: Manuf	

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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
CS15: Genera	in closed process al exposures (clos	ed systems)	of exposure th occasional contro	llad avpagure	

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

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PROC2: Use in closed, continuous process with occasion controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) whe opportunity for exposure arises : PROC4: Use in batch and other process (synthesis) whe opportunity for exposure arises : PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/o significant contact) PROC8:: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers a non-dedicated facilities PROC8: Transfer of substance or preparation (charging/discharging) from/ to vessels/large containers at dedicate facilities PROC8: Transfer of substance or preparation (charging discharging) from/ to vessels/large containers at dedicate facilities PROC2: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC1: Vessels/large containers at dedicate facilities PROC1: Use as laboratory reagent ERC2: Formulation of preparations Further information : Formulation, packing and re-packing of the substance an mixtures in batch or continuous operations, including stor 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 preparations Product characteristics Yiscosity, dynamic Yiscosity, dynamic : 10,34 mPa.s at 30 °C </th <th>When the recommended risk man</th> <th></th>	When the recommended risk man	
Further information : Formulation, packing and re-packing of the substance an mixtures in batch or continuous operations, including stor 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 or parations Product characteristics Viscosity, dynamic : 10,34 mPa.s at 30 °C	Sector of use	 preparations at industrial sites SU 10: Formulation [mixing] of preparations and/ or repackaging (excluding alloys) 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 PROC9: 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;
mixtures in batch or continuous operations, including stor materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activitie 2.1 Contributing scenario controlling environmental exposure for:ERC2: Formulation preparations Product characteristics Viscosity, dynamic : 10,34 mPa.s at 30 °C		:
		mixtures in batch or continuous operations, including storage materials transfers, mixing, tabletting, compression,
Viscosity, dynamic : 10,34 mPa.s at 30 °C	reparations	ling environmental exposure for:ERC2: Formulation of
		: 10,34 mPa.s at 30 °C
(MSafe) based on release following total wastewater treatment removal (tonnes/day): (Msafe)	following total wastewater treatment removal (tonnes/day): (Msafe)	:
Remarks : Not applicable	Remarks	: Not applicable

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Technical conditions and measur Remarks	es / Organizational measures : Not applicable
Use in closed process, no likel	rolling worker exposure for: PROC1, PROC2, PROC15: lihood of exposure, Use in closed, continuous process osure, Use as laboratory reagent
Product characteristics Physical Form (at time of use) Vapor pressure	: Liquid substance : > 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 affeo Remarks	 cting workers exposure 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 cont process (synthesis or formulat	rolling worker exposure for: PROC3: Use in closed batch tion)
Product characteristics Physical Form (at time of use) Vapor pressure	: Liquid substance : > 0,5 kPa
Physical Form (at time of use)	
Physical Form (at time of use) Vapor pressure Amount used	: > 0,5 kPa
Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use	 : > 0,5 kPa : Not applicable : Covers daily exposures up to 8 hours (unless stated differently)
Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use Remarks Other operational conditions affeo Remarks	 : > 0,5 kPa : Not applicable : Covers daily exposures up to 8 hours (unless stated differently) cting workers exposure : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Physical Form (at time of use) Vapor pressure Amount used Remarks Frequency and duration of use Remarks Other operational conditions affect Remarks Technical conditions and measure Provide enhanced general ventilation 2.2 Contributing scenario cont PROC14: Use in batch and other arises, Transfer of substance of large containers at dedicated for	 : > 0,5 kPa : Not applicable : Covers daily exposures up to 8 hours (unless stated differently) cting workers exposure : Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

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by tabletting, compression, extru	usion, pelletization; Industrial setting;
Product characteristics Physical Form (at time of use) Vapor pressure	: Liquid substance : > 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 affections Remarks	 ng workers exposure 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 Avoid carrying out operation for more	/limit releases, dispersion and exposure than 4 hours.
Conditions and measures related to Wear suitable gloves tested to EN374	personal protection, hygiene and health evaluation 4.
substance or preparation (chargi non-dedicated facilities Product characteristics Physical Form (at time of use) Vapor pressure	 ing/discharging) from/to vessels/large containers at Liquid substance > 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 affection Remarks	 ng workers exposure 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 c	
Organizational measures to prevent Avoid carrying out operation for more	/limit releases, dispersion and exposure than 4 hours.
	personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training.

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3. Exposure estimation and reference to its source

Workers/Consumers

Contributing Scenario	Exposure Assessment Method	conditions		Level of Exposure	Risk characterizatio 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
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	routes
PROC1: Use in closed proces CS15: General exposures (cl	
PROC2: Use in closed, contir CS15: General exposures (clo	nuous process with occasional controlled exposure osed systems)
PROC15: Use as laboratory r CS36: Laboratory activities	reagent
PROC3: Use in closed batch CS15: General exposures (clo	process (synthesis or formulation) osed systems)
PROC4: Use in batch and oth CS55: Batch process	ner process (synthesis) where opportunity for exposure arises
PROC8b: Transfer of substar containers at dedicated facilit CS14: Bulk transfers	nce or preparation (charging/ discharging) from/ to vessels/ large ies
PROC9: Transfer of substance weighing) CS4: Dipping, immersion and	ce or preparation into small containers (dedicated filling line, including
PROC14: Production of mixtu Industrial setting; CS4: Dipping, immersion and	rres or articles by tabletting, compression, extrusion, pelletization;
	nce or preparation (charging/discharging) from/to vessels/large containe
at non-dedicated facilities CS14: Bulk transfers	ice of preparation (charging/discharging) non/to vessels/large containe
CS14: Bulk transfers . Guidance to Downstream y the Exposure Scenario Confirm that RMMs and OG When the recommended ris are observed, exposures a characterisation ratios are o	n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1
CS14: Bulk transfers . Guidance to Downstrean y the Exposure Scenario Confirm that RMMs and OC When the recommended ris are observed, exposures a characterisation ratios are o Short title of Exposure Scenario	n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1 rio: Use as a cleaning agent – industrial
CS14: Bulk transfers . Guidance to Downstream by the Exposure Scenario Confirm that RMMs and OC When the recommended ris are observed, exposures a characterisation ratios are Short title of Exposure Scenar Main User Groups	n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1 rio: Use as a cleaning agent – industrial : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
CS14: Bulk transfers . Guidance to Downstream by the Exposure Scenario Confirm that RMMs and OC When the recommended ris are observed, exposures a characterisation ratios are of Short title of Exposure Scena Main User Groups Sector of use	n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1 rio: Use as a cleaning agent – industrial : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
CS14: Bulk transfers Guidance to Downstream by the Exposure Scenario Confirm that RMMs and OC When the recommended ris are observed, exposures a characterisation ratios are of Short title of Exposure Scenario Main User Groups	n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1 rio: Use as a cleaning agent – industrial : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites : SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites : 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
CS14: Bulk transfers Guidance to Downstream by the Exposure Scenario Confirm that RMMs and OC When the recommended ris are observed, exposures a characterisation ratios are of Short title of Exposure Scenario Main User Groups Sector of use	 n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1 rio: Use as a cleaning agent – industrial SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites 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
CS14: Bulk transfers Guidance to Downstream y the Exposure Scenario Confirm that RMMs and OC When the recommended ris are observed, exposures a characterisation ratios are of Short title of Exposure Scenario Main User Groups Sector of use	 n User to evaluate whether he works inside the boundaries s Cs are as described or of equivalent efficiency. sk management measures (RMMs) and operational conditions (OCs) re not expected to exceed the predicted DNELs and the resulting risk expected to be less than 1 rio: Use as a cleaning agent – industrial SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites 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

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	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.
•	lling environmental exposure for:ERC4: Industrial use of d products, not becoming part of articles
Viscosity, dynamic	: 10,34 mPa.s at 30 °C
(Msafe)	: 396 kg/day
Dilution Factor (River) Dilution Factor (Coastal Areas) Other given operational conditions a	
Number of emission days per year Emission or Release Factor: Air Emission or Release Factor: Water	: 300 : 30 % : 0,01 %
Emission or Release Factor: Soil	: 0%
Technical conditions and measures Air	 / Organizational measures 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 Type of Sewage Treatment Plant Percentage removed from waste	<pre>municipal sewage treatment plant Municipal sewage treatment plant 0 %</pre>
water Procedures to limit air emissions from Sewage Treatment Plant	: No data available
Remarks	: Domestic sewage treatment is not assumed.
Conditions and measures related to Waste treatment	 external treatment of waste for disposal External treatment and disposal of waste should comply with applicable local and/or national regulations.
Conditions and measures related to Recovery Methods	
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closed process, no likelihood of	
occasional controlled exposure	olling worker exposure for: PROC1, PROC2: Use in exposure, Use in closed, continuous process with
Dreduct characteristics	
Product characteristics	· Liquid substance
Physical Form (at time of use) Vapor pressure	: Liquid substance : > 0,5 kPa
vapor pressure	. > 0,3 KFA
Amount used	
Remarks	: Not applicable
Frequency and duration of use	
Remarks	: Covers daily exposures up to 8 hours (unless stated
	differently)
Other operational conditions affecti	
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.
	ampient temperature, uniess stated unierently.
Technical conditions and measures	i
	, ventilation. Natural ventilation is from doors, windows etc.
	upplied or removed by a powered fan.
	11
2.2 Contributing scenario contro	Iling worker exposure for: PROC4: Use in batch and
	opportunity for exposure arises
Product characteristics	
Physical Form (at time of use)	: Liquid substance
Vapor pressure	~ 1000 substance $\sim > 0.5$ kPa
vapor pressure	. > 0,5 KF a
Amount used	
Remarks	: Not applicable
Frequency and duration of use	
Remarks	: Covers daily exposures up to 8 hours (unless stated
	differently)
Other operational conditions affecti	
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 ventilatior	
Provide enhanced general ventilation	n by mechanical means.
Provide enhanced general ventilatior Organizational measures to prevent	n by mechanical means. t /limit releases, dispersion and exposure
Provide enhanced general ventilation	n by mechanical means. t /limit releases, dispersion and exposure
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours.
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours.
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training.
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes 2.2 Contributing scenario contro	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training.
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes 2.2 Contributing scenario contro Product characteristics	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training. olling worker exposure for: PROC7: Industrial spraying
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes 2.2 Contributing scenario contro	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training.
Provide enhanced general ventilation Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes 2.2 Contributing scenario contro Product characteristics Physical Form (at time of use)	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training. olling worker exposure for: PROC7: Industrial spraying
Organizational measures to prevent Avoid carrying out operation for more Conditions and measures related to Wear chemically resistant gloves (tes 2.2 Contributing scenario contro Product characteristics	n by mechanical means. t /limit releases, dispersion and exposure e than 4 hours. o personal protection, hygiene and health evaluation sted to EN374) in combination with 'basic' employee training. olling worker exposure for: PROC7: Industrial spraying : Liquid substance

Culfalana A Arabudaana	SAFETY DATA SHEET
Sulfolane - A Anhydrous Version 3.5	Revision Date 2021-09-15
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 affection	
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 o	
Wear chemically resistant gloves (tes	personal protection, hygiene and health evaluation sted to EN374) in combination with specific activity training. g to EN140 with Type A filter or better.
	 Illing worker exposure for: PROC8b: Transfer of ing/ discharging) from/ to vessels/ large containers at Liquid substance > 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 affecti	na 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	
Organizational measures to prevent Avoid carrying out operation for more	t /limit releases, dispersion and exposure e than 4 hours.
Conditions and measures related to Wear suitable gloves tested to EN374	personal protection, hygiene and health evaluation 4.
	Illing worker exposure for: PROC8a, PROC10, PROC13:
containers at non-dedicated faci	lities, Roller application or brushing, Treatment of
Transfer of substance or prepara containers at non-dedicated facil articles by dipping and pouring SDS Number:100000014122	

	SAFETY DATA SHEET
Sulfolane - A Anhydrous	
Version 3.5	Revision Date 2021-09-15
Product characteristics Physical Form (at time of use) Vapor pressure	: Liquid substance : > 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 affec Remarks	 ting workers exposure 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 measure Ensure material transfers are unde	-
Organizational measures to preven Avoid carrying out operation for mo	nt /limit releases, dispersion and exposure re than 4 hours.
	to personal protection, hygiene and health evaluation ested 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
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SAFETY DATA SHEET

Version 3.5				Revisio	n Date 2021-09-1
			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
	Woulled		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
	Modified		Worker – dermal, long-	1,37 mg/kg/d	0,4
			term – systemic 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
	in closed process al exposures (clo			I I	
PROC2: Use		ious process w	ith occasional control	lled exposure	
PROC4: Use CS55: Batch		er process (syn	thesis) where opportu	unity for exposure	arises
PROC7: Indu CS10: Spray	ustrial spraying ing				
	dedicated facilitie		on (charging/ discharg	jing) from/ to vess	els/ large
PROC8a: Tra at non-dedica CS14: Bulk ti	ated facilities	e or preparatic	on (charging/dischargi	ing) from/to vesse	ls/large containers
PROC10: Ro	ller application or	brushina			

CS51: Rolling, Brushing

PROC13: Treatment of articles by dipping and pouring

SDS Number:100000014122

SAFETY DATA SHEET

Version 3.5

Revision Date 2021-09-15

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

SDS Number:100000014122