SAFETY DATA SHEET

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Regulation(EU) No. 2020/878

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

1.1 Product identifier

Product name: Silquest A-187™ silane

Chemical name	Oxirane, 2-[[3-(trimethoxysilyl)propoxy]methyl]-
INDEX No.	Not applicable
CAS-No.	2530-83-8
EC No.	219-784-2
REACH Registration No.	01-2119513212-58-xxxx

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

Identified uses: For industrial use only.
Uses advised against: Not known.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Importer/Distributor Information	:	Momentive Performance Materials GmbH Chempark Leverkusen Gebaeude V7 DE - 51368 Leverkusen Germany
Contact person	:	commercial.services@momentive.com
Telephone	:	General information +390510924300 (Customer Service Centre)
1.4 Emergency telephone number	:	Europe, Israel & All other: +44 (0) 1235239670; Middle East:+44 (0) 1235239671

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

The product has been classified according to the legislation in force.

Classification according to Regulation (EC) No 1272/2008 as amended.

Health Hazards		
Serious eye damage	Category 1	H318: Causes serious eye damage.
Environmental Hazards		
Chronic hazards to the aquatic environment	Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2 Label Elements

Contains: 3-glycidyl-oxypropyl-trimethoxy-silane

Signal Words: Danger

Hazard Statement(s): H318: Causes serious eye damage.
H412: Harmful to aquatic life with long lasting effects.

Precautionary Statements

Prevention: P273: Avoid release to the environment.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response: P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/ physician.

Disposal: P501: Dispose of contents/ container to an approved facility in accordance with local, regional, national and international regulations.

Unknown toxicity - Health

Acute toxicity, oral	0 %
Acute toxicity, dermal	0 %
Acute toxicity, inhalation, vapor	0 %
Acute toxicity, inhalation, dust or mist	0 %

Unknown toxicity - Environment

Acute hazards to the aquatic environment	0 %
Chronic hazards to the aquatic environment	0 %

Additional Information: No data available.

2.3 Other hazards

Endocrine disrupting properties-Toxicity
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Endocrine disrupting properties-Ecotoxicity
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

Silquest A-187™ silane

Chemical nature: Gamma-Glycidoxypropyltrimethoxysilane

3.1 Substances

General information: No data available.
Chemical name Oxirane, 2-[[3-(trimethoxysilyl)propoxy]methyl]-
INDEX No.: Not applicable
CAS-No.: 2530-83-8
EC No.: 219-784-2
REACH Registration No.: 01-2119513212-58-xxxx
M-Factor: Not applicable

Chemical name	Concentration	CAS-No.	EC No.	REACH Registration No.	M-Factor:	Notes
3-glycidyl-oxypropyl-trimethoxy-silane	98 - <100%	2530-83-8	219-784-2	01-2119513212-58-XXXX	Not applicable	

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
# This substance has workplace exposure limit(s).
PBT: persistent, bioaccumulative and toxic substance.
vPvB: very persistent and very bioaccumulative substance.

SECTION 4: First aid measures

General: Move into fresh air and keep at rest. Get medical attention immediately.

4.1 Description of first aid measures

Inhalation: Move the exposed person to fresh air at once. If respiratory problems, artificial respiration/oxygen. Call a physician or poison control center immediately.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

Skin Contact: Wash off promptly and flush contaminated skin with water. Promptly remove clothing if soaked through and flush skin with water. Continue to rinse for at least 15 minutes. Get medical attention. Wash contaminated clothing before reuse. After contact with skin, remove product mechanically.

Ingestion: If conscious, drink plenty of water. Do not induce vomiting. Call a physician or poison control center immediately.

4.2 Most important symptoms and effects, both acute and delayed: Product may hydrolyse on contact with moisture and upon contact with bodily fluids to produce methanol, which is readily and rapidly absorbed at all exposure routes and is toxic by all routes. Therefore, consider the signs/symptoms of methanol poisoning and also observe the known latency period of several days.

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: No data available.

Treatment: Get medical attention immediately. If swallowed, do NOT induce vomiting. Give a glass of water.

SECTION 5: Firefighting measures

General Fire Hazards:	Do not use water jet as an extinguisher, as this will spread the fire. Use water spray to keep fire-exposed containers cool.
5.1 Extinguishing media	
Suitable extinguishing media:	Alcohol resistant foam. Carbon dioxide Dry chemical.
Unsuitable extinguishing media:	Avoid water in straight hose stream; will scatter and spread fire.
5.2 Special hazards arising from the substance or mixture:	In case of fire, carbon monoxide and carbon dioxide may be formed.
5.3 Advice for firefighters	
Special fire-fighting procedures:	Take precautionary measures against static discharges. To prevent and minimize fire or explosion risk from static accumulation and discharge, effectively bond and/or ground product transfer system.
Special protective equipment for fire-fighters:	Wear self-contained breathing apparatus and protective clothing.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures:	Avoid contact with eyes, skin, and clothing. Avoid contact with liquid and vapors. Use personal protective equipment. Use only in well-ventilated areas.
6.2 Environmental Precautions:	Do not allow runoff to sewer, waterway or ground.
6.3 Methods and material for containment and cleaning up:	Absorb spillage with suitable absorbent material. Shovel up and place in a container for salvage or disposal.
6.4 Reference to other sections:	Remove sources of ignition. In case of spills, beware of slippery floors and surfaces. See Section 8 of the SDS for Personal Protective Equipment. Collect and dispose of spillage as indicated in section 13 of the SDS.

SECTION 7: Handling and storage:

7.1 Precautions for safe handling:	Do not taste or swallow. Avoid contact with eyes, skin, and clothing. Wash hands after handling. Provide adequate ventilation. Avoid inhalation of dust and vapors.
Storage conditions:	Keep container tightly closed. Keep away from sources of ignition - No smoking.
7.2 Conditions for safe storage, including any incompatibilities:	Keep container tightly closed. Keep away from sources of ignition - No smoking.
Storage Stability:	Material is stable under normal conditions.
7.3 Specific end use(s):	No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control Parameters

Occupational Exposure Limits

None of the components have assigned exposure limits.

Biological Limit Values

None.

8.2 Exposure controls

Appropriate Engineering Controls: Provide eyewash station and safety shower. General (mechanical) room ventilation is expected to be satisfactory if handled at low temperatures or in covered equipment. Provide adequate ventilation if fumes or vapors are generated.

Individual protection measures, such as personal protective equipment

General information: Use only in well-ventilated areas. Do not eat, drink or smoke when using the product. Wash hands after handling. Practice good housekeeping.

Eye/face protection: Safety glasses with side-shields conforming to EN166 Use face shield in case of splash risk.

Skin protection

Hand Protection: Advice: This recommendation is valid only for our Product as delivered. If this product will be mixed with other substances you need to contact a supplier of CE approved protective gloves (e.g. KCL GmbH, D-36124 Eichenzell, Tel. 0049 (0) 6659 87300, Fax. 0049 (0) 6659 87155, email: vertrieb@kcl.de).
Material: 898 Butoject
Minimum break through time: 480 min
Glove thickness: 0,7 mm
Guideline: EN 374

Other: Safety shoes Wear suitable protective clothing.

Respiratory Protection: Respirator with a vapour filter (EN 141) Avoid inhalation of vapors. In case of inadequate ventilation, use air-supplied full-mask.

Hygiene measures: Avoid contact with eyes. When using do not smoke. Wash thoroughly after handling.

Environmental exposure controls: No release to wastewater from process as such, wastewater emissions limited to release generated from final equipment cleaning step using water

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance

Physical state:	liquid
Form:	liquid
Color:	Clear
Odor:	ester like
Odor Threshold:	No data available.
pH:	No data available.
Freezing point:	-70 °C
Boiling Point:	233 °C
Flash Point:	110 °C
Evaporation Rate:	< 1
Flammability (solid, gas):	This product is not flammable.

Silquest A-187™ silane

Flammability Limit - Upper (%):	No data available.
Flammability Limit - Lower (%):	No data available.
Vapor pressure:	0,011 hPa (20 °C)
Relative vapor density:	No data available.
Density:	No data available.
Relative density:	1,07 (20 °C)
Solubility(ies)	
Solubility in Water:	36,5 g/l (20 °C)
Solubility (other):	No data available.
Partition coefficient (n-octanol/water) Log Pow:	0,5
Auto-ignition temperature:	400 °C
Decomposition Temperature:	No data available.
SADT:	No data available.
Viscosity, dynamic:	2,9 mPa·s
Viscosity, kinematic:	No data available.
Explosive properties:	No data available.
Oxidizing properties:	No data available.

9.2 Other information

Minimum ignition temperature:	400 °C

SECTION 10: Stability and reactivity

10.1 Reactivity: No data available.

10.2 Chemical Stability: Material is stable under normal conditions.

10.3 Possibility of hazardous reactions: POLYMERIZATION - HYDROLYSIS The epoxysilane esters are not monomers in the usual sense, but polymeric materials may be produced under certain conditions of catalyzed partial hydrolysis. Polysiloxanes are produced by polymerization of the silyl ester group in the presence of controlled amounts of water and alkali or acid catalyst at ambient temperatures. At slightly higher temperatures (ca. 50 °C), polyglycols or polyglycol ethers are produced via the epoxy functional group under the same conditions of water concentration and alkali or acid catalyst. In as much as both of these reactions are exothermic and may occur simultaneously, the heat evolved may be cumulative and greatly accelerate the rate of reactions. It is imperative, therefore, that unintentional contamination of the epoxysilane esters with water be avoided, and that intentional hydrolysis be properly controlled to avoid hazardous consequences.

10.4 Conditions to avoid: Avoid contact with: Ignition sources.

10.5 Incompatible Materials: Reacts with water or moisture to form: Methanol

10.6 Hazardous Decomposition Products: Hazardous Decomposition Products Carbon oxides Oxides of silicon.

SECTION 11: Toxicological information

General information: Product may hydrolyze upon contact with body fluids in the gastrointestinal tract to produce additional methanol. The potential for toxic effects due to methanol formation (eye damage and blindness, metabolic acidosis, dizziness and drowsiness, fetal toxicity, and liver, kidney, and heart muscle damage) should be recognized.

Information on likely routes of exposure

Inhalation: No data available.

Ingestion: No data available.

Skin Contact: No data available.

Eye contact: No data available.

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Oral

Product: Not classified for acute toxicity based on available data.
Not classified for acute toxicity based on available data.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	

Dermal

Product: Not classified for acute toxicity based on available data.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

Inhalation

Product: Not classified for acute toxicity based on available data.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	LC50): > 5,3 mg/l

Repeated dose toxicity

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	NOAEL : 500 mg/kg NOAEL : 225 mg/m³

Skin Corrosion/Irritation:

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	OECD-Guideline 404 (Acute Dermal Irritation/Corrosion) Non irritating

Serious Eye Damage/Eye Irritation:

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	OECD-Guideline 405 (Acute Eye Irritation/Corrosion) This substance is corrosive.

Respiratory or Skin Sensitization:

Silquest A-187™ silane

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	, OECD-Guideline 406 (Skin Sensitisation)Non sensitizing.

Germ Cell Mutagenicity

In vitro

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	(OECD-Guideline 471 (Genetic Toxicology: Salmonella typhimurium, Reverse Mutation Assay))Positive in the Ames test. Chinese Hamster Ovary (CHO) (OECD 476): negative (not mutagenic) Mouse Lymphoma Assay (OECD Guidline 476) (OECD 476): positive

In vivo

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	Chromosomal aberration (OECD-Guideline 474 (Genetic Toxicology: Micronucleus Test)): positive

Carcinogenicity

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	Not classified

Reproductive toxicity

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	Not classified

Specific Target Organ Toxicity - Single Exposure

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

Specific Target Organ Toxicity - Repeated Exposure

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

Aspiration Hazard

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

11.2 Information on other hazards

Endocrine disrupting properties

Product: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.;

Components:

3-glycidyl-oxypropyl-trimethoxy-silane: No data available.

Other effects: No data available.

SECTION 12: Ecological information

12.1 Toxicity

Acute toxicity

Fish

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane: LC50 (Fish, 96 h): 55 mg/l (Tested according to Directive 92/69/EEC.)

Aquatic Invertebrates

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane: EC 50 (Daphnia, 48 h): 324 mg/l (USEPA. 1975)

Chronic Toxicity

Fish

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane: No data available.

Aquatic Invertebrates

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane: NOEC (Daphnia, 21 d): > 100 mg/l (OECD-Guideline 211)

Toxicity to Aquatic Plants

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane: NOEC (Algae, 7 d): 119 mg/l

12.2 Persistence and Degradability

Biodegradation

Product: No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	The product is not readily biodegradable.

BOD/COD Ratio

Product	No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

12.3 Bioaccumulative potential

Product:	No data available.

Specified substance(s)

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

12.4 Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

12.5 Results of PBT and vPvB assessment: No data available.

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

12.6 Endocrine disrupting properties:

Product:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Components:

3-glycidyl-oxypropyl-trimethoxy-silane	No data available.

12.7 Other adverse effects:

Other hazards

Product:	No data available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

General information:	See Section 8 for information on appropriate personal protective equipment. The generation of waste should be avoided or minimized wherever possible. Do not discharge into drains, water courses or onto the ground.
Disposal methods:	Can be incinerated when in compliance with local regulations.

SECTION 14: Transport information

ADR

Not Regulated.

ADN

Not Regulated.

RID

Not Regulated.

IMDG

Not Regulated.

IATA

Not Regulated.

14.6 Special precautions for user: This product is not regarded as dangerous goods according to the national and international regulations on the transport of dangerous goods. Keep away from food, drink and animal feeding stuffs. Protect from moisture.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: Regulatory information

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

EU Regulations

Regulation 1005/2009/EC on substances that deplete the ozone layer, Annex I, Controlled Substances: none

Regulation 1005/2009/EC on substances that deplete the ozone layer, Annex II, New Substances: none

EU. Regulation 2019/1021/EU on persistent organic pollutants (POPs) (recast), as amended: none

Regulation (EC) No. 649/2012 Import and export of dangerous chemicals: none

Regulation (EC) No. 1907/2006, REACH Annex XIV Substances subject to authorisation, as amended: none

EU. REACH Candidate List of Substances of Very High Concern for Authorization (SVHC): none

Regulation (EC) No. 1907/2006 Annex XVII Substances subject to restriction on marketing and use: none

Directive 2004/37/EC on the protection of workers from the risks related to exposure to carcinogens and mutagens at work.: none

Directive 92/85/EEC: on the safety and health of pregnant workers and workers who have recently given birth or are breast feeding.: none

EU. Directive 2012/18/EU (SEVESO III) on major accident hazards involving dangerous substances,

Annex I: None present or none present in regulated quantities.

EU. Regulation No. 166/2006 PRTR (Pollutant Release and Transfer Registry), Annex II: Pollutants: none

Directive 98/24/EC on the protection of workers from the risks related to chemical agents at work: none

15.2 Chemical safety assessment: A Chemical Safety Assessment has been performed on this substance.

Inventory Status

REACH:	If purchased from Momentive Performance Materials GmbH in Leverkusen, Germany, all substances in this product have been registered by Momentive Performance Materials GmbH or upstream in our supply chain or are exempt from registration under Regulation (EC) No 1907/2006 (REACH). For polymers, this includes the constituent monomers and other reactants.	Remarks: None.
Australia Industrial Chem. Act (AIIC):	On or in compliance with the inventory	Remarks: None.
Canada DSL Inventory List:	On or in compliance with the inventory	Remarks: None.
Canada NDSL Inventory:	Not in compliance with the inventory.	Remarks: None.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory	Remarks: None.
Japan (ENCS) List:	On or in compliance with the inventory	Remarks: None.
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory	Remarks: None.
New Zealand Inventory of Chemicals:	On or in compliance with the inventory	Remarks: None.
Philippines PICCS:	On or in compliance with the inventory	Remarks: None.
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory	Remarks: None.
US TSCA Inventory:	On or in compliance with the inventory	Remarks: Commercial Status: Active

SECTION 16: Other information

Revision Information: Not relevant.

Key literature references and sources for data: No data available.

Wording of the H-statements in section 2 and 3

H318	Causes serious eye damage.
H412	Harmful to aquatic life with long lasting effects.

Training information: No data available.

Silquest A-187™ silane

Classification according to Regulation (EC) No 1272/2008 as amended.

Eye Dam. 1, H318

Issue Date: 27.11.2023

Disclaimer:

Notice to reader

Unless otherwise specified in section 1.2, Momentive Products are intended for industrial application only.
They are not intended for specific medical applications, neither for long-lasting (> 30 days) implantation into the human body, injected or directly ingested, nor for the manufacture of multiple usable contraceptives.

Further Information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only asa guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warrantyor 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.

Annex to the extended Safety Data Sheet (eSDS)

Content

including photovoltaics, Manufacture of, Electronics

Exposure Scenario 18. Professional use, Methanol, Exposure to substances released during end-use of products

Exposure Scenario 19. Consumer use, Methanol, Exposure to substances released during end-use of products

Exposure Scenario 1.

Exposure scenario worker

1.Manufacture of substance

List of use descriptors	
Sector(s) of use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals SU19: Building and construction work
Product categories [PC]:	PC19: Intermediate (precursor) PC9a: Coatings and paints, thinners, paint removers PC1: Adhesives, sealants

Name of contributing environmental scenario and corresponding ERC	Manufacture of substance: ERC1: Manufacture of the substance ERC2: Formulation into mixture (mixtures) ERC6a: Use of intermediate ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

List of names of contributing worker scenarios and corresponding PROCs	Manufacture of substance: PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes

	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2.1.Contributing exposure scenario controlling environmental exposure for: Manufacture of substance

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	3600 tonnes/year
Daily amount per site	10286 kg/day Manufacturing
Daily amount per site	514 kg/day Formulation

Frequency and duration of use

Batch process:	not relevant
Continuous process:	350 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	not relevant
Local freshwater dilution factor	900
Local marine water dilution factor	1.000

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	350	0,001 %	-	-	Production
Continuous release	350	0,25 %	-	0,5 %	Formulation

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d):	
type:	municipal
Discharge rate:	1.300 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	Fresh water

Size of municipal sewage system/treatment plant (m³/d):	
type:	municipal
Discharge rate:	3.100 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	Marine water

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Manufacture of substance

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	10.286 kg Production
Maximum daily site tonnage (kg/day):	514 kg Formulation

Frequency and duration of use

	Use duration:	**Frequency of use:**	**Remarks**
Exposure time	15 - 60 min	1 Exposure time per day	PROC1, PROC2, PROC3, PROC4, PROC5
Exposure time	< 15 min	5 Exposure time per day	PROC8b, PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand	240 cm² PROC1 PROC3

Palm of both hands	480 cm² PROC2 PROC4 PROC5 PROC8b PROC9

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:		Highly controlled conditions		All relevant Process Categories
	Inhalation	with local exhaust ventilation	97 %	PROC8b
	Inhalation	with local exhaust ventilation	90 %	PROC2, PROC3, PROC4, PROC5, PROC9

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Inhalation, Dermal	Specific workers training in use of personal protective equipment, Process safety assessment, General Standard Operating Procedures which control routine activities, Use a 'permit to work' system for maintenance of tanks and silos., Flushing, purging and venting of vessel lines are implemented before cleaning or maintenance, Operator monitoring, Safety and environmental audits, Regular training of workers with respect to substance hazards and safe handling, Fully trained chemical operators, EMAS/ISO14001, Integrated safety management systems	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation, Dermal	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	95 %	All relevant Process Categories
	Dermal	Wear suitable protective clothing., Wear closed protection glasses., Wear face protective shield.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Manufacture of substance:

ERC1:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	1,62 mg/l	< 0,162	EUSES	
Fresh water	4,15 µg/l	0,00415	EUSES	
freshwater sediment	3,29 µg/kg wwt	0,00416	EUSES	
Saltwater	0,869 µg/l	0,000869	EUSES	
Saltwater Sediment	0,689 µg/kg wwt	0,000872	EUSES	
Soil	2,75 µg/kg wwt	0,0212	EUSES	

Health:

Manufacture of substance:

PROC1:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, including modification factor for exposure duration	0,019 mg/m³	0,000129	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,017 mg/kg bw/day	0,000810	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,000939	ECETOC TRA worker v3	none

PROC2:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,19 mg/m³	0,001293	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate	0,014 mg/kg bw/day	0,000667	ECETOC TRA worker v3	none

	dermal protection				
Worker - combined, long-term - systemic			0,001959	ECETOC TRA worker v3	none

PROC3:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,58 mg/m³	0,003946	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,0017 mg/kg bw/day	0,000081	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004027	ECETOC TRA worker v3	none

PROC4:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,96 mg/m³	0,006531	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for	0,035 mg/kg bw/day	0,001667	ECETOC TRA worker v3	none

	use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,008197	ECETOC TRA worker v3	none

PROC5:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,96 mg/m³	0,006531	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,0035 mg/kg bw/day	0,000167	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,006697	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,14 mg/m³	0,000952	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including	0,035 mg/kg bw/day	0,001667	ECETOC TRA worker v3	none

	modification factor for use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,002619	ECETOC TRA worker v3	none

PROC9:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,48 mg/m³	0,003265	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,035 mg/kg bw/day	0,001667	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004932	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 2.

Exposure scenario worker

1.Use as an intermediate

List of use descriptors	
Sector(s) of use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Product categories [PC]:	PC19: Intermediate (precursor)

Name of contributing environmental scenario and corresponding ERC	Use as an intermediate: ERC6a: Use of intermediate

List of names of contributing worker scenarios and corresponding PROCs	Use as an intermediate: 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 PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

2.1.Contributing exposure scenario controlling environmental exposure for: Use as an intermediate

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	250 tonnes/year
Daily amount per site	1 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	250 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	400.000 m3/d
Local freshwater dilution factor	40
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	250	0 %	-	2 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal
Discharge rate:	10.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use as an intermediate

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	1.000 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	15 - 60 min	1 Exposure time per day	PROC1, PROC2, PROC3, PROC4
Exposure time	< 15 min	1 Exposure time per day	PROC8b

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand	240 cm² PROC1 PROC2 PROC3

Palm of both hands	480 cm² PROC4 PROC8b

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	with local exhaust ventilation	90 %	PROC2, PROC3, PROC4
	Inhalation	with local exhaust ventilation	97 %	PROC8b
		Highly controlled conditions		All relevant Process Categories

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Inhalation, Dermal	Specific workers training in use of personal protective equipment	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear suitable protective clothing., Wear closed protection glasses., Wear face protective shield.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Use as an intermediate:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	1,64 mg/l	< 0,164	EUSES	
Fresh water	0,0433 mg/l	0,0433	EUSES	

freshwater sediment	0,0344 mg/kg wwt	0,0435	EUSES	
Saltwater	0,0166 mg/l	0,166	EUSES	
Saltwater Sediment	0,0132 mg/kg wwt	0,167	EUSES	
Soil	0,827 µg/kg wwt	0,00636	EUSES	

Health:

Use as an intermediate:

PROC1:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, including modification factor for exposure duration	0,019 mg/m³	0,000129	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,035 mg/kg bw/day	0,001667	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,001796	ECETOC TRA worker v3	none

PROC2:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,19 mg/m³	0,001293	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate	0,014 mg/kg bw/day	0,000667	ECETOC TRA worker v3	none

	dermal protection				
Worker - combined, long-term - systemic			0,001959	ECETOC TRA worker v3	none

PROC3:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,58 mg/m³	0,003946	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,0034 mg/kg bw/day	0,000162	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004107	ECETOC TRA worker v3	none

PROC4:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,96 mg/m³	0,006531	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for	0,07 mg/kg bw/day	0,003333	ECETOC TRA worker v3	none

	use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,009864	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,14 mg/m³	0,000952	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,07 mg/kg bw/day	0,003333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004286	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 3.

Exposure scenario worker

1.Use as a monomer

List of use descriptors

Sector(s) of use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
Product categories [PC]:	PC19: Intermediate (precursor)

Name of contributing environmental scenario and corresponding ERC	Use as a monomer: ERC6c: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

List of names of contributing worker scenarios and corresponding PROCs	Use as a monomer: 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) PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

2.1.Contributing exposure scenario controlling environmental exposure for: Use as a monomer

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	250 tonnes/year
Daily amount per site	1 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	250 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	400.000 m3/d
Local freshwater dilution factor	40
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	250	0 %	-	2 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal
Discharge rate:	10.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.

Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use as a monomer

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	1.000 kg

Frequency and duration of use

	Use duration:	**Frequency of use:**	**Remarks**
Exposure time	15 - 60 min	1 Exposure time per day	PROC1, PROC2, PROC3, PROC4
Exposure time	< 15 min	1 Exposure time per day	PROC8b

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand	240 cm² PROC1 PROC3

Palm of both hands	480 cm² PROC2 PROC4 PROC8b

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	**Route of Exposure**	**Protective Measures**	**Effecti veness**	**Remarks**
Industrial:	Inhalation	Provide adequate general and local exhaust ventilation.	90 %	PROC2, PROC3, PROC4
	Inhalation	with local exhaust ventilation	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Specific workers training in use of personal protective equipment	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear closed protection glasses., Wear face protective shield., Wear suitable protective clothing.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Use as a monomer:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	1,64 mg/l	< 0,164	EUSES	
Fresh water	0,0433 mg/l	0,0433	EUSES	

freshwater sediment	0,0344 mg/kg wwt	0,0435	EUSES	
Saltwater	0,0166 mg/l	0,166	EUSES	
Saltwater Sediment	0,0137 mg/kg wwt	0,173	EUSES	
Soil	0,827 µg/kg wwt	0,00636	EUSES	

Health:

Use as a monomer:

PROC1:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, including modification factor for exposure duration	0,019 mg/m³	0,000129	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,035 mg/kg bw/day	0,001667	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,001796	ECETOC TRA worker v3	none

PROC2:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,19 mg/m³	0,001293	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate	0,014 mg/kg bw/day	0,000667	ECETOC TRA worker v3	none

	dermal protection				
Worker - combined, long-term - systemic			0,001959	ECETOC TRA worker v3	none

PROC3:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,58 mg/m³	0,003946	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,0034 mg/kg bw/day	0,000162	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004107	ECETOC TRA worker v3	none

PROC4:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,96 mg/m³	0,006531	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for	0,07 mg/kg bw/day	0,003333	ECETOC TRA worker v3	none

	use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,009864	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,14 mg/m³	0,000952	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,07 mg/kg bw/day	0,003333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004286	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 4.

Exposure scenario worker

1.Formulation of:, Coatings

List of use descriptors

Sector(s) of use	SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Product categories [PC]:	PC9a: Coatings and paints, thinners, paint removers

Name of contributing environmental scenario and corresponding ERC	Formulation of:, Coatings: ERC2: Formulation into mixture (mixtures)

List of names of contributing worker scenarios and corresponding PROCs	Formulation of:: PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2.1.Contributing exposure scenario controlling environmental exposure for: Formulation of:, Coatings

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	40 tonnes/year
Daily amount per site	0,2 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	200 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	20.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	200	0,25 %	-	0,5 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal
Discharge rate:	2.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Formulation of:, Coatings

Process Categories:	PROC1: Use in closed process, no likelihood of exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently). Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities 1 % dermal exposure Mixing or blending in batch processes Transfer of substance or mixture into small containers (dedicated filling line, including weighing) 1 - 5 % inhalation exposure Mixing or blending in batch processes Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	200 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	15 - 60 min	1 Exposure time per day	PROC5
Exposure time	> 240 min	1 Exposure time per day	PROC8a, PROC8b, PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC5 PROC8b PROC9

Both hands	960 cm² PROC8a

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

This information is not available.

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear closed protection glasses., Wear face protective shield., Wear suitable protective clothing.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Formulation of:, Coatings:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	0,411 mg/l	< 0,0411	EUSES	
Fresh water	0,043 mg/l	0,043	EUSES	

freshwater sediment	0,034 mg/kg wwt	0,043	EUSES	
Saltwater	0,0043 mg/l	0,043	EUSES	
Saltwater Sediment	0,0034 mg/kg wwt	0,043	EUSES	
Soil	1,14 µg/kg wwt	0,00877	EUSES	

Health:

Formulation of:, Coatings:

PROC5:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in product, including modification factor for exposure duration	1,9 mg/m³	0,012925	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,014 mg/kg bw/day	0,000667	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,013592	ECETOC TRA worker v3	none

PROC8a:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation	97 mg/m³	0,659864	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modificatio	1,4 mg/kg bw/day	0,06667	ECETOC TRA worker v3	none

	n factor for use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,666531	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation	49,24 mg/m³	0,334966	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,7 mg/kg bw/day	0,033333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,368299	ECETOC TRA worker v3	none

PROC9:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in product	9,6 mg/m³	0,065306	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation,	0,007 mg/kg bw/day	0,000333	ECETOC TRA worker v3	none

	including modification factor for use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,065639	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 5.

Exposure scenario worker

1.Use of coatings (e.g. beverage cans)

List of use descriptors	
Sector(s) of use	SU2b: Offshore industries SU4: Manufacture of food products SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU18: Manufacture of furniture
Product categories [PC]:	PC9a: Coatings and paints, thinners, paint removers

Name of contributing environmental scenario and corresponding ERC	Use of coatings (e.g. beverage cans): ERC5: Industrial use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Use of coatings (e.g. beverage cans): PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

	PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

2.1.Contributing exposure scenario controlling environmental exposure for: Use of coatings (e.g. beverage cans)

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	4 tonnes/year
Daily amount per site	17,5 kg/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	200 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	20.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	200	1 %	-	0 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal
Discharge rate:	2.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use of coatings (e.g. beverage cans)

Process Categories:	PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

Product characteristics

Concentration of the substance in a mixture:	1 % dermal exposure 1 - 5 % inhalation exposure

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	17,5 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	> 240 min	1 Exposure time per day	PROC7, PROC8b, PROC10, PROC13

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC8b PROC13

Both hands	960 cm² PROC10

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	Provide adequate general and local exhaust ventilation.	90 %	PROC10, PROC13
	Inhalation	Provide adequate general and local exhaust ventilation.	95 %	PROC7
	Inhalation	Provide adequate general and local exhaust ventilation.	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear closed protection glasses., Wear eye protection/face protection., Wear suitable protective clothing.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Use of coatings (e.g. beverage cans):

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	0 mg/l	0	EUSES	
Fresh water	2,34 µg/l	0,00234	EUSES	

freshwater sediment	1,86 µg/kg wwt	0,00235	EUSES	
Saltwater	0,230 µg/l	0,0023	EUSES	
Saltwater Sediment	0,183 µg/kg wwt	0,00232	EUSES	
Soil	0,190 µg/kg wwt	0,00146	EUSES	

Health:

Use of coatings (e.g. beverage cans):

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	0,29 mg/m³	0,001973	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,0007 mg/kg bw/day	0,000033	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,002006	ECETOC TRA worker v3	none

PROC10:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	1,9 mg/m³	0,006803	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust	0,0014 mg/kg	0,000067	ECETOC TRA	none

	ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	bw/day		worker v3	
Consumer - combined, long-term - systemic			0,006869	ECETOC TRA worker v3	none

PROC13:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**
Worker - combined, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	1,9 mg/m³	0,012925	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,0007 mg/kg bw/day	0,000033	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,012959	ECETOC TRA worker v3	none

PROC7:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	9,7 mg/m³	0,065986	ECETOC TRA worker v3	none
Worker - dermal	No Exposure.		< 1	spray application	Dermal exposure not considered (automated process)

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 6.

Exposure scenario worker

1.Use of coatings (e.g. automotive refinishing)

List of use descriptors	
Sector(s) of use	SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Product categories [PC]:	PC9a: Coatings and paints, thinners, paint removers

Name of contributing environmental scenario and corresponding ERC	Use of coatings (e.g. automotive refinishing): ERC5: Industrial use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Use of coatings (e.g. automotive refinishing): PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

2.1.Contributing exposure scenario controlling environmental exposure for: Use of coatings (e.g. automotive refinishing)

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	0,4 tonnes/year
Daily amount per site	1,3 kg/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	312 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	20.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	312	36 %	-	3 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal
Discharge rate:	2.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste
This information is not available.

Additional good practice advice beyond the REACH CSA
This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use of coatings (e.g. automotive refinishing)

Process Categories:	PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics	
Concentration of the substance in a mixture:	1 %

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used	
Maximum daily site tonnage (kg/day):	1,3 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	> 240 min	1 Exposure time per day	PROC7, PROC8b

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC8b

Hands and forearms	1500 cm² PROC7

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	Provide adequate general and local exhaust ventilation.	95 %	PROC7
	Inhalation	Provide adequate general and local exhaust ventilation.	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear closed protection glasses., Wear face protective shield., Wear suitable protective clothing.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Use of coatings (e.g. automotive refinishing):

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	1,64 mg/l	< 0,164	EUSES	
Fresh water	0,167 mg/l	0,167	EUSES	

freshwater sediment	0,132 mg/kg wwt	0,167	EUSES	
Saltwater	0,0167 mg/l	0,167	EUSES	
Saltwater Sediment	0,0132 mg/kg wwt	0,167	EUSES	
Soil	0,0819 mg/kg wwt	0,63	EUSES	

Health:

Use of coatings (e.g. automotive refinishing):

PROC7:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	9,7 mg/m³	0,065986	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,0021 mg/kg bw/day	0,000100	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,066086	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	0,29 mg/m³	0,001973	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust	0,0007 mg/kg	0,000033	ECETOC TRA	none

	ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	bw/day		worker v3	
Worker - combined, long-term - systemic			0,002006	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 7.

Exposure scenario worker

1.Professional use, Coatings

List of use descriptors	
Sector(s) of use	
Product categories [PC]:	PC9a: Coatings and paints, thinners, paint removers

Name of contributing environmental scenario and corresponding ERC	Professional use, Coatings: ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Professional use: PROC10: Roller application or brushing

	PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available

2.1.Contributing exposure scenario controlling environmental exposure for: Professional use, Coatings

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Daily amount per site	Not relevant
Annual amount per site	Not relevant

Frequency and duration of use

Batch process:	not relevant
Continuous process:	365 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	20.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	**Emission days**	**Emission factors**			**Remarks**
		Air	**Soil**	**Water**	
Continuous release	365	15 %	-	1 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	not relevant
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d):	
type:	municipal
Discharge rate:	2.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste
This information is not available.

Additional good practice advice beyond the REACH CSA
This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Professional use, Coatings

Process Categories:	PROC10: Roller application or brushing PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available

Product characteristics

Concentration of the substance in a mixture:	1 % dermal exposure 1 - 5 % inhalation exposure Roller application or brushing 1 % inhalation exposure Non industrial spraying

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used
Not applicable for wide dispersive uses.

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	> 240 min	1 Exposure time per day	PROC10, PROC11, PROC19

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC10 PROC19

Hands and forearms	1500 cm² PROC11

Other given operational conditions affecting workers exposure

Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use			0	Non industrial spraying

Other relevant operational conditions:	Room volume: < 100 m³ . Non industrial spraying

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

This information is not available.

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Professional:	Inhalation, Dermal	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Professional:	Dermal	Wear suitable gloves.	80 %	All relevant Process Categories

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation

Environment:

Professional use, Coatings:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	0,79 µg/l	< 0,000079	EUSES	
Fresh water	2,42 µg/l	0,00242	EUSES	
freshwater sediment	1,92 µg/kg wwt	0,00243	EUSES	
Saltwater	0,238 µg/l	0,00238	EUSES	
Saltwater Sediment	0,189 µg/kg wwt	0,00239	EUSES	
Soil	0,577 µg/kg wwt	0,00444	EUSES	

Health:

Professional use, Coatings:

PROC10:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in product	49,2 mg/m³	0,335374	ECETOC TRA worker v3	Manual activities involving hand contact covered with this PROC
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,055 mg/kg bw/day	0,002619	ECETOC TRA worker v3	Manual activities involving hand contact covered with this PROC
Worker - combined, long-term - systemic			0,337993	ECETOC TRA worker v3	none

PROC11:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in	0,33 mg/m³	0,002245	StoffenManager (inhalation exposure)	none

	product				
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,021 mg/kg bw/day	0,001000	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,003245	ECETOC TRA worker v3, StoffenManager (inhalation exposure)	No exposure assessment presented for human health.

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 8.

Exposure scenario consumer

1.Consumer use, Coatings:

List of use descriptors	
Sector(s) of use	
Product categories [PC]:	PC9a: Coatings and paints, thinners, paint removers

Name of contributing environmental scenario and corresponding ERC	Uses in coatings: ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix

	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Uses in coatings: PROC10: Roller application or brushing PROC11: Non industrial spraying PROC19: Hand-mixing with intimate contact and only PPE available

2.1.Contributing exposure scenario controlling environmental exposure for: Uses in coatings

No exposure assessment presented for the environment. Environmental exposure is considered to be covered under ES 7 as a worst case.

2.2. Contributing exposure scenario controlling consumer exposure for: Uses in coatings

Product Categories:	PC9a: Coatings and paints, thinners, paint removers : :
Product characteristics	

Concentration of the substance in a mixture:	1 %

Physical form of the product:	liquid
Vapour pressure:	calculated 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant
Application:	not relevant

Amounts used	

per task:	1 kg

Frequency and duration of use

	Use duration (h/d):	Frequency of use:	Remarks
Exposure time	132 min	1Exposure time per year	

Human factors not influenced by risk management

Exposed skin areas:

ConsExpo default	960 cm²

Other given operational conditions affecting consumers exposure

Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor or outdoor use	20 m3		0,6	

Other relevant operational conditions	Respiration: 26 m³/day Body weight:: 65 kg Release duration: 120 min

Risk management measures (RMM)

Conditions and measures related to information and behavioural advice to consumers

Consumer	Dermal Protective gloves are recommended. Wear safety glasses with side shields (or goggles).

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

not relevant

3. Exposure estimation and reference to its source

Environment:

none

Health:

Uses in coatings:

:

	Specific condition	Exposure level	RCR	Method	Remarks
Consumer - inhalative, long-term - systemic	Including modification factor for concentration in product	0,0264 mg/m³	0,000607	ConsExpo v4.1, Default values: painting products - brush and rolling painting - solvent rich paint	none
Consumer - dermal, long-term - systemic	Including modification factor for concentration in product	0,0015 mg/kg bw/day	0,000122	ConsExpo v4.1, Default values: painting products - brush and rolling painting - solvent rich paint	none
Consumer - combined, long-term - systemic			0,000729		none
Consumer - inhalative, short-term - systemic	Including modification factor for concentration in product	9,63 mg/m³	0,22	ConsExpo v4.1, Default values: painting products - brush and rolling painting - solvent rich paint	none
Consumer - dermal, short-term - local and systemic	Including modification factor for concentration in product	0,55 mg/kg bw/day	0,044	ConsExpo v4.1, Default values: painting products - brush and	none

				rolling painting - solvent rich paint	
Consumer - combined, short-term - systemic			0,264		none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 9.

Exposure scenario worker

1.Formulation of:, Non-metal, Surface treatment, Use in non-metal surface treatment.

List of use descriptors	
Sector(s) of use	SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement
Product categories [PC]:	PC15: Non-metal surface treatment products

Name of contributing environmental scenario and corresponding ERC	Formulation of:, Non-metal, Surface treatment, Use in non-metal surface treatment.: ERC2: Formulation into mixture (mixtures) ERC5: Industrial use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Formulation of:: PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

	PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC13: Treatment of articles by dipping and pouring

2.1.Contributing exposure scenario controlling environmental exposure for: Formulation of:, Non-metal, Surface treatment, Use in non-metal surface treatment.

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	200 tonnes/year
Daily amount per site	1 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	200 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	400.000 m3/d
Local freshwater dilution factor	40
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	200	7,5 %	-	4 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal, industrial
Discharge rate:	10.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Formulation of:, Non-metal, Surface treatment, Use in non-metal surface treatment.

Process Categories:	PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC13: Treatment of articles by dipping and pouring

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 25 %. Mixing or blending in batch processes Industrial spraying Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities Treatment of articles by dipping and pouring Covers percentage substance in the product up to 100 % (unless stated differently). Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	1.000 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	> 240 min	1 Exposure time per day	PROC5, PROC8a, PROC8b, PROC13

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC5 PROC8b PROC13

Both hands	960 cm² PROC8a

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	Provide adequate general and local exhaust ventilation.	97 %	PROC8b
	Inhalation	Provide adequate general and local exhaust ventilation.	90 %	PROC5, PROC8a, PROC13

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Specific workers training in use of personal protective equipment	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear suitable protective clothing., Wear closed protection glasses., Wear face protective shield.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Formulation of:, Non-metal, Surface treatment, Use in non-metal surface treatment.:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	3,29 mg/l	< 0,329	EUSES	
Fresh water	0,0846 mg/l	0,0846	EUSES	

freshwater sediment	0,0671 mg/kg wwt	0,0849	EUSES	
Saltwater	0,0331 mg/l	0,331	EUSES	
Saltwater Sediment	0,0263 mg/kg wwt	0,333	EUSES	
Soil	0,0822 mg/kg wwt	0,0632	EUSES	

Health:

Formulation of:, Non-metal, Surface treatment, Use in non-metal surface treatment.:

PROC5:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product, including modification factor for exposure duration	0,58 mg/m³	0,003946	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product, including modification factor for use of appropriate dermal protection	0,0017 mg/kg bw/day	0,000081	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,004027	ECETOC TRA worker v3	none

PROC8a:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for	0,01 mg/m³	0,000068	ECETOC TRA worker v3	none

	concentration in product, including modification factor for exposure duration				
Worker - dermal, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product, including modification factor for use of appropriate dermal protection	0,003 mg/kg bw/day	0,000143	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,000211	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product, including modification factor for exposure duration	0,14 mg/m³	0,000952	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, Including	0,017 mg/kg bw/day	0,000810	ECETOC TRA worker v3	none

	modification factor for concentration in product, including modification factor for use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,001762	ECETOC TRA worker v3	none

PROC13:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	5,8 mg/m³	0,039456	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product, including modification factor for use of appropriate dermal protection	0,017 mg/kg bw/day	0,000810	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,040265	ECETOC TRA worker v3	none

PROC7:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - all relevant routes	No Exposure.		< 1		No exposure assessment presented for human health.

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 10.

Exposure scenario worker

1.Use in non-metal surface treatment., In situ treatment

List of use descriptors	
Sector(s) of use	SU11: Manufacture of rubber products SU12: Manufacture of plastics products, including compounding and conversion SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement
Product categories [PC]:	PC15: Non-metal surface treatment products

Name of contributing environmental scenario and corresponding ERC	Use in non-metal surface treatment., In situ treatment: ERC3: Formulation in materials ERC5: Industrial use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Use in non-metal surface treatment.: PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

2.1.Contributing exposure scenario controlling environmental exposure for: Use in non-metal surface treatment., In situ treatment

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	200 tonnes/year
Daily amount per site	1 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	200 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	400.000 m3/d
Local freshwater dilution factor	40
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	20	0,025 %	-	0,035 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal, industrial
Discharge rate:	10.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste
This information is not available.

Additional good practice advice beyond the REACH CSA
This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Use in non-metal surface treatment., In situ treatment

Process Categories:	PROC5: Mixing or blending in batch processes PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

Product characteristics	
Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used	
Maximum daily site tonnage (kg/day):	1.000 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	< 15 min	1 Exposure time per day	PROC8b
Exposure time	15 - 60 min	1 Exposure time per day	PROC5

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC5 PROC8b

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	Provide adequate general and local exhaust ventilation.	90 %	PROC5
	Inhalation	Provide adequate general and local exhaust ventilation.	97 %	PROC8b

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Specific workers training in use of personal protective equipment	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear suitable protective clothing., Wear closed protection glasses., Wear face protective shield.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Use in non-metal surface treatment., In situ treatment:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	0,0288 mg/l	< 0,0029	EUSES	
Fresh water	3,06 µg/l	0,00306	EUSES	

freshwater sediment	2,43 µg/kg wwt	0,00308	EUSES	
Saltwater	0,518 µg/l	0,00518	EUSES	
Saltwater Sediment	0,411 µg/kg wwt	0,0052	EUSES	
Soil	0,795 µg/kg wwt	0,00612	EUSES	

Health:

Use in non-metal surface treatment., In situ treatment:

PROC5:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,97 mg/m³	0,006599	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,007 mg/kg bw/day	0,000333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,006923	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,14 mg/m³	0,000952	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,07 mg/kg bw/day	0,003333	ECETOC TRA worker v3	none

Worker - combined, long-term - systemic			0,004286	ECETOC TRA worker v3	none

PROC7:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - all relevant routes	No Exposure.		0		No exposure assessment presented for human health.

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 11.

Exposure scenario worker

1.Formulation of sealants.

List of use descriptors	
Sector(s) of use	SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Product categories [PC]:	PC1: Adhesives, sealants

Name of contributing environmental scenario and corresponding ERC	Formulation of sealants.: ERC2: Formulation into mixture (mixtures)

List of names of contributing worker scenarios and corresponding PROCs	Formulation of sealants.: PROC5: Mixing or blending in batch processes PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

2.1.Contributing exposure scenario controlling environmental exposure for: Formulation of sealants.

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	200 tonnes/year
Daily amount per site	1 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	200 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	20.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	200	2,5 %	-	0,325 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant
Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m^3/d):	
type:	municipal, industrial
Discharge rate:	2.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Formulation of sealants.

Process Categories:	PROC5: Mixing or blending in batch processes PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently). Mixing or blending in batch processes Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities 10 % dermal exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing) Covers percentage substance in the product up to 25 %. inhalation exposure Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	1.000 kg Formulation

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	15 - 60 min	1 Exposure time per day	PROC5
Exposure time	> 240 min	1 Exposure time per day	PROC8b, PROC9

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC5 PROC8b PROC9

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	Provide adequate general and local exhaust ventilation.	97 %	PROC8b
	Inhalation	Provide adequate general and local exhaust ventilation.	90 %	PROC5, PROC9

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Specific workers training in use of personal protective equipment	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear suitable protective clothing., Wear closed protection glasses., Wear face protective shield.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Formulation of sealants.:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	1,33 mg/l	< 0,13	EUSES	
Fresh water	0,136 mg/l	0,136	EUSES	

freshwater sediment	0,108 mg/kg wwt	0,137	EUSES	
Saltwater	0,0136 mg/l	0,136	EUSES	
Saltwater Sediment	0,0108 mg/kg wwt	0,137	EUSES	
Soil	0,0278 mg/kg wwt	0,214	EUSES	

Health:

Formulation of sealants.:

PROC5:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,97 mg/m³	0,006599	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,007 mg/kg bw/day	0,000333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,006932	ECETOC TRA worker v3	none

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation	1,4 mg/m³	0,009524	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,07 mg/kg bw/day	0,003333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,012857	ECETOC TRA worker v3	none

PROC9:

Silquest A-187™ silane

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, Including modification factor for concentration in product	2,9 mg/m³	0,019728	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,007 mg/kg bw/day	0,000333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,020061	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 12.

Exposure scenario worker

1.Industrial use of sealants.

List of use descriptors	
Sector(s) of use	SU5: Manufacture of textiles, leather, fur SU6a: Manufacture of wood and wood products

	SU6b: Manufacture of pulp, paper and paper products SU12: Manufacture of plastics products, including compounding and conversion SU13: Manufacture of other non-metallic mineral products, e.g. plasters, cement SU15: Manufacture of fabricated metal products, except machinery and equipment SU16: Manufacture of computer, electronic and optical products, electrical equipment SU17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment SU19: Building and construction work
Product categories [PC]:	PC1: Adhesives, sealants

Name of contributing environmental scenario and corresponding ERC	Industrial use of sealants.: ERC8b: Wide dispersive indoor use of reactive substances in open systems

List of names of contributing worker scenarios and corresponding PROCs	Industrial use of sealants.: PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

2.1.Contributing exposure scenario controlling environmental exposure for: Industrial use of sealants.

Product characteristics

Physical state	liquid

Viscosity:	
Kinematic viscosity:	2,7 mm2/s (20 °C, calculated)
Dynamic viscosity:	2,9 mPa·s (20 °C, calculated)

Amounts used

Annual amount per site	100 tonnes/year
Daily amount per site	0,5 tonnes/day

Frequency and duration of use

Batch process:	not relevant
Continuous process:	200 Emission days

Environment factors not influenced by risk management

Flow rate of receiving surface water (m^3/d):	20.000 m3/d
Local freshwater dilution factor	10
Local marine water dilution factor	100

Other given operational conditions affecting environmental exposure

type	Emission days	Emission factors			Remarks
		Air	Soil	Water	
Continuous release	200	0,1 %	-	0 %	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 8 of the safety data sheet (Environmental exposure controls).

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Air	Air emission abatement not specifically required for this substance.
Soil	not relevant
Water	Ensure all waste water is collected and treated via a WWTP.
Sediment:	not relevant

Remarks:	not relevant

Organisational measures to prevent/limit release from site:

none

Conditions and measures related to sewage treatment plant

Size of municipal sewage system/treatment plant (m³/d):	
type:	municipal, industrial
Discharge rate:	2.000 m3/d
Treatment effectiveness:	not relevant
Sludge treatment technique:	Incinerate or landfill. Spreading of sludge is assumed as a worst case scenario.
Measures to limit air emissions:	not relevant
Remarks:	not relevant

Conditions and measures related to external treatment of waste for disposal

Fraction of used amount transferred to external waste treatment:

Suitable waste treatment	Treatment effectiveness	Remarks
Solid wastes from production are ultimately disposed of via landfill or incineration., Aqueous waste is treated in on-site or municipal secondary biological treatment plants prior to discharge.		

Method	Treatment effectiveness	Remarks
Non-aqueous waste may be disposed off site as hazardous waste		

Conditions and measures related to external recovery of waste

This information is not available.

Additional good practice advice beyond the REACH CSA

This information is not available.

2.2. Contributing exposure scenario controlling worker exposure for: Industrial use of sealants.

Process Categories:	PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation

Product characteristics

Concentration of the substance in a mixture:	5 - 25 % inhalation exposure 10 % dermal exposure

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	500 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	60 - 240 min	1 Exposure time per day	PROC8b
Exposure time	> 240 min	1 Exposure time per day	PROC10, PROC13, PROC14

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC8b PROC13 PROC14

Both hands	960 cm² PROC10

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	without local exhaust ventilation		All relevant Process Categories

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Dermal	Wear suitable protective clothing., Wear closed protection glasses., Wear face protective shield.		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

Industrial use of sealants.:

Compartment	PEC	RCR	Method	Remarks
Sewage treatment plant	0 mg/l	0	EUSES	
Fresh water	2,34 µg/l	0,00234	EUSES	

freshwater sediment	1,86 µg/kg wwt	0,00235	EUSES	
Saltwater	0,23 µg/l	0,00230	EUSES	
Saltwater Sediment	0,183 µg/kg wwt	0,00232	EUSES	
Soil	1,06 µg/kg wwt	0,00815	EUSES	

Health:

Industrial use of sealants.:

PROC8b:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in product, including modification factor for exposure duration	17 mg/m³	0,115646	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,069 mg/kg bw/day	0,003286	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,118932	ECETOC TRA worker v3	none

PROC10:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation,	58 mg/m³	0,394558	ECETOC TRA worker v3	none

	Including modification factor for concentration in product				
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,28 mg/kg bw/day	0,013333	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,407891	ECETOC TRA worker v3	none

PROC13:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in product	58 mg/m³	0,394558	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate	0,14 mg/kg bw/day	0,006667	ECETOC TRA worker v3	none

	dermal protection, Including modification factor for concentration in product				
Worker - combined, long-term - systemic			0,401224	ECETOC TRA worker v3	none

PROC14:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, Including modification factor for concentration in product	29 mg/m³	0,197279	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,034 mg/kg bw/day	0,001619	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,198898	ECETOC TRA worker v3	none

PROC7:

	Specific condition	**Exposure level**	**RCR**	**Method**	**Remarks**

Worker - all relevant routes	No Exposure.		0		none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 13.

Exposure scenario worker

1.Professional use of sealants.

List of use descriptors	
Sector(s) of use	SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Product categories [PC]:	PC1: Adhesives, sealants

Name of contributing environmental scenario and corresponding ERC	Professional use of sealants.: ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

List of names of contributing worker scenarios and corresponding PROCs	Professional use of sealants.: PROC10: Roller application or brushing PROC19: Hand-mixing with intimate contact and only PPE available

2.1.Contributing exposure scenario controlling environmental exposure for: Professional use of sealants.

No exposure assessment presented for the environment.

2.2. Contributing exposure scenario controlling worker exposure for: Professional use of sealants.

Process Categories:	PROC10: Roller application or brushing PROC19: Hand-mixing with intimate contact and only PPE available

Product characteristics

Concentration of the substance in a mixture:	10 %

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

per shift:	3,1 kg

Frequency and duration of use

	Use duration:	**Frequency of use:**	**Remarks**
Exposure time	480 min	3 Exposure time per day	PROC19

Human factors not influenced by risk management

Exposed skin areas:

ConsExpo default, Joint sealants	2 cm²

Other given operational conditions affecting workers exposure

Area of use	**Room size:**	**Temperature:**	**Ventilation rate**	**Remarks**
Indoor or outdoor use	30 m3		4,2	

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg Release area: estimated 1 m²

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

This information is not available.

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Professional:	Dermal, Inhalation	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Professional:	Dermal, Inhalation	Wear suitable gloves., Wear eye protection/face protection.		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation

Environment:

none

Health:

Professional use of sealants.:

PROC19:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - dermal, long-term - systemic	Including modification factor for concentration in product	2,14 mg/kg bw/day	0,102	ConsExpo v4.1, Joint sealants	none
Worker - inhalative, long-term - systemic	Including modification factor for concentration in product	105 mg/m³	0,714	ConsExpo v4.1, Joint sealants	none
Worker - combined, long-term - systemic			0,816		none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 14.

Exposure scenario consumer

1.Consumer use, Sealants:

List of use descriptors	
Sector(s) of use	SU21: Consumer uses: Private households (= general public = consumers)
Product categories [PC]:	PC1: Adhesives, sealants

Name of contributing environmental scenario and corresponding ERC	Consumer use, Sealants: ERC8c: Widespread use leading to inclusion into/onto article (indoor) ERC8f: Widespread use leading to inclusion into/onto article (outdoor)

List of names of contributing worker scenarios and corresponding PROCs	Consumer use: PROC10: Roller application or brushing PROC19: Hand-mixing with intimate contact and only PPE available

2.1.Contributing exposure scenario controlling environmental exposure for: Consumer use, Sealants

No exposure assessment presented for the environment.

2.2. Contributing exposure scenario controlling consumer exposure for: Consumer use, Sealants

Product Categories:	PC1: Adhesives, sealants :

Product characteristics

Concentration of the substance in a mixture:	10 %

Physical form of the product:	liquid
Vapour pressure:	calculated 0,011 hPa
Process temperature:	not relevant
Remarks	not relevant
Application:	not relevant

Amounts used

per task:	0,075 kg

Frequency and duration of use

	Use duration (h/d):	**Frequency of use:**	**Remarks**
Exposure time	45 min	3Exposure time per year	

Human factors not influenced by risk management

Exposed skin areas:

ConsExpo default, Joint sealants	2 cm^2

Other given operational conditions affecting consumers exposure

Area of use	Room size:	Temperature:	Ventilation rate	Remarks
Indoor use	10 m3		2	

Other relevant operational conditions	not relevant

Risk management measures (RMM)

Conditions and measures related to information and behavioural advice to consumers

Consumer	Dermal Protective gloves are recommended. Wear safety glasses with side shields (or goggles).

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

See chapter 8 of the safety data sheet (Personal protection equipment)

Additional good practice advice beyond the REACH CSA

not relevant

3. Exposure estimation and reference to its source

Environment:

none

Health:

Consumer use, Sealants:

:

	Specific condition	Exposure level	RCR	Method	Remarks
Consumer - inhalative, long-term - systemic	Including modification factor for concentration in product	0,027 mg/m³	0,000621	ConsExpo v4.1, Joint sealants	none
Consumer - dermal, long-term - systemic	Including modification factor for concentration in product	0,019 mg/kg bw/day	0,0015		none
Consumer - combined, long-term - systemic			0,002121		none
Consumer - inhalative, short-term - systemic	Including modification factor for concentration in product	3,28 mg/m³	0,075	ConsExpo v4.1, Joint sealants	none
Consumer - dermal, short-term - local and systemic	Including modification factor for concentration in product	2,31 mg/kg bw/day	0,18		none
Consumer - combined, short-term - systemic			0,255		none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 15.

Exposure scenario worker

1.Use as laboratory reagent

List of use descriptors	
Sector(s) of use	SU24: Scientific research and development
Product categories [PC]:	PC21: Laboratory chemicals

Name of contributing environmental scenario and corresponding ERC	Use as laboratory reagent: : None

List of names of contributing worker scenarios and corresponding PROCs	Use as laboratory reagent: PROC15: Use as laboratory reagent

2.1.Contributing exposure scenario controlling environmental exposure for: Use as laboratory reagent

No exposure assessment presented for the environment.

2.2. Contributing exposure scenario controlling worker exposure for: Use as laboratory reagent

Process Categories:	PROC15: Use as laboratory reagent

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently).

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Maximum daily site tonnage (kg/day):	0,01 kg

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	< 15 min	1 Exposure time per day	PROC15

Human factors not influenced by risk management

Exposed skin areas:

Palm of one hand	240 cm² PROC15

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m³/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	Containment measures required		PROC15
	Inhalation	with local exhaust ventilation		PROC15

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Basic workers training in use of personal protective equipment.	PROC15

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal	Wear suitable protective clothing., Wear eye protection/face protection.		PROC15
	Dermal	Wear suitable gloves.	90 %	PROC15
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		PROC15

Additional good practice advice beyond the REACH CSA

This information is not available.

3. Exposure estimation

Environment:

none

Health:

Use as laboratory reagent:

PROC15:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration	0,48 mg/m³	0,00327	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection	0,034 mg/kg bw/day	0,00162	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,00489		none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 16.

Exposure scenario worker

1.Textiles

List of use descriptors	
Sector(s) of use	SU5: Manufacture of textiles, leather, fur SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
Product categories [PC]:	PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids

Name of contributing environmental scenario and corresponding ERC	Textiles: ERC2: Formulation into mixture (mixtures) ERC6b: Industrial use of reactive processing aids

List of names of contributing worker scenarios and corresponding PROCs	Textiles: PROC5: Mixing or blending in batch processes PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

2.1.Contributing exposure scenario controlling environmental exposure for: Textiles

No exposure assessment presented for the environment.

2.2. Contributing exposure scenario controlling worker exposure for: Textiles

Process Categories:	PROC5: Mixing or blending in batch processes PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring

Product characteristics

Concentration of the substance in a mixture:	Covers percentage substance in the product up to 100 % (unless stated differently). Mixing or blending in batch processes Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities Transfer of substance or mixture into small containers (dedicated filling line, including weighing) 1 % Roller application or brushing Treatment of articles by dipping and pouring

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Frequency and duration of use

	Use duration:	**Frequency of use:**	**Remarks**
Exposure time	15 - 60 min	1 Exposure time per day	PROC5, PROC8b, PROC9
Exposure time	> 240 min	1 Exposure time per day	PROC10, PROC13

Human factors not influenced by risk management

Exposed skin areas:

Palm of both hands	480 cm² PROC5 PROC8b PROC9 PROC13

Both hands	960 cm² PROC10

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	not relevant

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	with local exhaust ventilation	90 %	PROC10

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Inhalation, Dermal	Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories
	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	PROC10, PROC13
	Dermal	Wear suitable protective clothing., Wear eye protection/face protection.		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

none

Health:

Textiles:

PROC5:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, including modification factor for exposure duration	9,7 mg/m³	0,065986	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection	1,4 mg/kg bw/day	0,066667	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,132653	ECETOC TRA worker v3	none

PROC8b, PROC9:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	Without local exhaust ventilation, including modification factor for exposure duration	9,7 mg/m³	0,065986	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for	0,69 mg/kg bw/day	0,032857	ECETOC TRA worker v3	none

	use of appropriate dermal protection				
Worker - combined, long-term - systemic			0,098844	ECETOC TRA worker v3	none

PROC10:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic	With local exhaust ventilation, including modification factor for exposure duration, Including modification factor for concentration in product	0,39 mg/m³	0,002653	ECETOC TRA worker v3	none
Worker - dermal, long-term - systemic	With local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,0014 mg/kg bw/day	0,000067	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,002720	ECETOC TRA worker v3	none

PROC13:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative,	Without	3,9	0,026531	ECETOC	none

long-term - systemic	local exhaust ventilation, including modification factor for exposure duration, Including modification factor for concentration in product	mg/m³		TRA worker v3	
Worker - dermal, long-term - systemic	Without local exhaust ventilation, including modification factor for use of appropriate dermal protection, Including modification factor for concentration in product	0,0068 mg/kg bw/day	0,000324	ECETOC TRA worker v3	none
Worker - combined, long-term - systemic			0,026854	ECETOC TRA worker v3	none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 17.

Exposure scenario worker

1.Manufacture of silicon wafers for semiconductors industry, including photovoltaics, Manufacture of, Electronics

List of use descriptors	
Sector(s) of use	SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys) SU16: Manufacture of computer, electronic and optical products, electrical equipment
Product categories [PC]:	PC9a: Coatings and paints, thinners, paint removers PC33: Semiconductors

Name of contributing environmental scenario and corresponding ERC	Manufacture of silicon wafers for semiconductors industry, including photovoltaics, Manufacture of, Electronics: ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6b: Industrial use of reactive processing aids

List of names of contributing worker scenarios and corresponding PROCs	Manufacture of silicon wafers for semiconductors industry, including photovoltaics: PROC2: Use in closed, continuous process with occasional controlled exposure PROC5: Mixing or blending in batch processes 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 PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available

2.1.Contributing exposure scenario controlling environmental exposure for: Manufacture of silicon wafers for semiconductors industry, including photovoltaics, Manufacture of, Electronics

No exposure assessment presented for the environment.

2.2. Contributing exposure scenario controlling worker exposure for: Manufacture of silicon wafers for semiconductors industry, including photovoltaics, Manufacture of, Electronics

Process Categories:	PROC2: Use in closed, continuous process with occasional controlled exposure PROC5: Mixing or blending in batch processes 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 PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available

Product characteristics

Concentration of the substance in a mixture:	40 %

Physical form of the product:	liquid
Vapour pressure:	Measured 0,011 hPa
Process temperature:	20 °C
Remarks	not relevant

Amounts used

Frequency and duration of use

	Use duration:	Frequency of use:	Remarks
Exposure time	> 240 min	1 Exposure time per day	PROC1, PROC2, PROC8a, PROC9

Human factors not influenced by risk management

Exposed skin areas:

OECD ESD model	420 cm^2

Other given operational conditions affecting workers exposure

Other relevant operational conditions:	Respiration: 10 m^3/day Body weight:: 70 kg

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Dermal, Inhalation	Containment measures required		All relevant Process Categories
	Inhalation	with local exhaust ventilation		All relevant Process Categories

Organisational measures to prevent/limit releases, dispersion and exposure

Application	Route of Exposure	Protective Measures	Remarks
Industrial:	Dermal, Inhalation	Regular training of workers with respect to substance hazards and safe handling, Basic workers training in use of personal protective equipment.	All relevant Process Categories

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Industrial:	Inhalation	If technical exhaust or ventilation measures are not possible or insufficient, respiratory protection must be worn., Respiratory protection mask with Filtertype ABEK		All relevant Process Categories
	Dermal	Wear suitable gloves.	90 %	All relevant Process Categories
	Dermal	Wear suitable protective clothing.		All relevant Process Categories
	Inhalation, Dermal	See chapter 8 of the safety data sheet (Personal protection equipment)		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

Procedural and technological control using Best Available Technique (BAT)

3. Exposure estimation

Environment:

none

Health:

Manufacture of silicon wafers for semiconductors industry, including photovoltaics, Manufacture of, Electronics:

PROC8a, PROC9:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - dermal	including modification factor for use of appropriate dermal protection, With local exhaust ventilation	0,5 mg/kg bw/day	0,0238	OECD ESD model	none
Worker - inhalative	No Exposure.		0		none

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 18.

Exposure scenario worker

1.Professional use, Methanol, Exposure to substances released during end-use of products

List of use descriptors	
Sector(s) of use	SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Product categories [PC]:	

Name of contributing environmental scenario and corresponding ERC	

List of names of contributing worker scenarios and corresponding PROCs	Professional use: : Professional use: :

2.2. Contributing exposure scenario controlling worker exposure for: Professional use, Methanol, Exposure to substances released during end-use of products

Process Categories:	:

Product characteristics

Concentration of the substance in a mixture:	4.1 %

Physical form of the product:	Gaseous
Vapour pressure:	ca. 0,0128 hPa
Process temperature:	not relevant
Remarks	not relevant

Amounts used

Amounts used	3,1 kg

Frequency and duration of use

	Use duration:	**Frequency of use:**	**Remarks**
Exposure time	480 min	1 takes per day	

Human factors not influenced by risk management

Exposed skin areas:

ConsExpo default	2 cm^2

Other given operational conditions affecting workers exposure

Area of use	**Room size:**	**Temperature:**	**Ventilation rate**	**Remarks**
Indoor use	30 m3		4,2	

Other relevant operational conditions:	Body weight:: 70 kg Respiration: 10 m^3/day

Risk management measures (RMM)

Technical conditions and measures at process level (source) to prevent release

See chapter 7 of the safety data sheet

Technical conditions and measures to control dispersion from source towards the worker

This information is not available.

Organisational measures to prevent/limit releases, dispersion and exposure

This information is not available.

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

Application	Route of Exposure	Protective Measures	Effectiveness	Remarks
Professional:	Dermal	Wear suitable gloves., Wear eye protection/face protection.		All relevant Process Categories

Additional good practice advice beyond the REACH CSA

This information is not available.

2.3. Contributing exposure scenario controlling worker exposure for: Professional use, Methanol, Exposure to substances released during end-use of products

No exposure assessment presented for the environment.

3. Exposure estimation

Environment:

Health:

Professional use, Methanol, Exposure to substances released during end-use of products:

All relevant Process Categories:

	Specific condition	Exposure level	RCR	Method	Remarks
Worker - inhalative, long-term - systemic		42 mg/m³	0,16	ConsExpo 4.1 (Consumer inhalation exposure), Joint sealants	none
Worker - dermal, long-term - systemic	No Exposure.		0	ConsExpo v4.1, Joint sealants	none

Professional use, Methanol, Exposure to substances released during end-use of products:

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

Exposure Scenario 19.

Exposure scenario consumer

1.Consumer use, Methanol, Exposure to substances released during end-use of products:

List of use descriptors	
Sector(s) of use	SU21: Consumer uses: Private households (= general public = consumers)
Product categories [PC]:	

Name of contributing environmental scenario and corresponding ERC	

List of names of contributing worker scenarios and corresponding PROCs	Consumer use: : Consumer use: :

2.2. Contributing exposure scenario controlling consumer exposure for: Consumer use, Methanol, Exposure to substances released during end-use of products
Product characteristics

Concentration of the substance in a mixture:	4.1 %

Physical form of the product:	Gaseous
Vapour pressure:	0,0128 hPa
Process temperature:	not relevant
Remarks	not relevant
Application:	not relevant

Amounts used

Daily amount for wide dispersive uses	0,075 kg

Frequency and duration of use

	Use duration (h/d):	**Frequency of use:**	**Remarks**
Exposure time	45 min	3Exposure time per year	

Human factors not influenced by risk management

Exposed skin areas:

ConsExpo default	2 cm^2

Other given operational conditions affecting consumers exposure

Area of use	**Room size:**	**Temperature:**	**Ventilation rate**	**Remarks**
Indoor use	10 m3		2	

Other relevant operational conditions	Body weight:: 65 kg Respiration: 37,44 m^3/day Release duration: 30 min

Risk management measures (RMM)

This information is not available.

Additional good practice advice beyond the REACH CSA

not relevant

2.3. Contributing exposure scenario controlling consumer exposure for: Consumer use, Methanol, Exposure to substances released during end-use of products

No exposure assessment presented for the environment.

3. Exposure estimation and reference to its source

Environment:

Health:

Consumer use, Methanol, Exposure to substances released during end-use of products:

All relevant Process Categories:

	Specific condition	Exposure level	RCR	Method	Remarks
Consumer - inhalative, short-term - local and systemic		4,98 mg/m³	0,096	ConsExpo 4.1 (Consumer inhalation exposure)	none
Consumer - dermal	No Exposure.		0	ConsExpo v4.1	none
Consumer - inhalative, long-term - local and systemic		0,049 mg/m³	0,00092	ConsExpo 4.1 (Consumer inhalation exposure)	none
Consumer - dermal, long-term - local and systemic	No Exposure.		0	ConsExpo v4.1	none

Consumer use, Methanol, Exposure to substances released during end-use of products:

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

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html). If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.