

SAFETY DATA SHEET

(in accordance with Annex II of Regulation (EC) No 1907/2006 (REACH) and its amendments)

MEG**Section 1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/
UNDERTAKING****1.1 Product identifier**

Product identifier: MONOETHYLENE GLYCOL
Chemical formula: ethane-1,2-diol
Synonym(s): CALOTECH MEG PUR inhibit
CALOTECH MEG -20° inhibit

1.2 Relevant identified uses of the substance and uses advised against

Identified uses:
Anti-freezing agents

|| Recommended use restriction: use reserved for industrial or professional users.

1.3 Details of the supplier of the safety data sheet

Name: **CALORIE FLUOR**
Address: 411 rue Clément Ader
FR – 78530 BUC
Phone: +33 /1 39 24 16 70
Fax: +33 /1 39 56 07 18
e-mail address: service.commercial@calorie-fluor.fr
Web Site: <http://www.calorie-fluor.fr>

1.4 Emergency phone number

Phone: Outside the U.S.: 1-703-527-3887 (CHEMTREC)

Section 2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or the mixture**

Classification of the substance according to CLP (1272/2008/EC):

Acute toxicity (Oral), category 4

H302 : Harmful if swallowed.

Specific target organ toxicity - repeated exposure, category 2

H373 : May cause damage to organs (Kidney) through prolonged or repeated exposure.

2.2 Label elements

Labelling according to Regulation (EC) No. 1272/2008.

ETHYLENE GLYCOL N° CE 203-473-3

Hazard symbols :



SGH07 SGH08

Mention d'avertissement : WARMING

Hazard statements: H302 Harmful if swallowed.
H373 May cause damage to organs (Kidney) through prolonged or repeated exposure.

Precautionary statements

Prevention: P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.

Response: P314 Get medical advice/ attention if you feel unwell.
P301 + P312 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.

Disposal : P501 Dispose of contents/ container to an approved waste disposal plant.

2.3 Other hazards

No other informations

Section 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substance

Chemical name (chemical formula)	Ethane-1,2-diol
Index number	603-027-00-1
CAS number	107-21-1
CE number	203-473-3
Reach registration number	01-2119456816-28
Concentration%	30 - 100%
Classification Regulation (EC) N°1272/2008	Acute Tox.4 - H302 ; STOT RE 2 - H373

Section 4. FIRST AID MEASURES

Generally, in case of doubt or if symptoms persist, always call a doctor.
Never give anything by mouth to an unconscious person.

4.1 Description of necessary first-aid measures

Inhalation:

Move the person away from the contaminated area, to breathe fresh air. Oxygen or artificial respiration if needed. Take off all contaminated clothing immediately. Symptoms of poisoning may not appear for several hours. Keep under medical supervision for at least 48 hours. Consult a physician.

Contact with the skin:

Take off all contaminated clothing immediately. Wash immediately, abundantly and thoroughly with water.

Contact with the eyes:

Wash immediately, abundantly and thoroughly with water. If irritation persists, consult an ophthalmologist.

Ingestion:

Rinse mouth with water. Never give anything by mouth to an unconscious person. Don't induce vomiting. Consult a physician if necessary.

Rescuers protection:

In case of insufficient ventilation, wear suitable respiratory equipment.

4.2 Most important symptoms and effects, both acute and delayed

See section 11.

4.3 Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

Section 5. FIREFIGHTING MEASURES

5.1 Firefighting measures

Suitable extinguishing media:

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Cool containers / tanks with water spray.

Unsuitable extinguishing media: None

5.2 Special hazards arising from the substance or mixture

This product is not flammable in air under ambient conditions of temperature and pressure. Hazardous decomposition products formed under fire conditions

- Carbon monoxide
- Carbon dioxide

5.3 Advice for firefighters

Wear self-contained breathing apparatus and protective clothing.

Wear chemical-resistant outerwear.

Section 6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate personnel not required or not equipped with personal protection.

Provide adequate ventilation.

Avoid contact with skin, eyes and inhalation of fumes.

Remove all ignition sources. Do not smoke

6.2 Environmental precautions

Do not dump into the environment.

Avoid spills or leaks.

Retain and dispose of contaminated washing water.

6.3 Methods and material for containment and cleaning up

Contain spillage, soak up with non-combustible absorbent material, (sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).

Pick up and transfer to properly labelled containers.

6.4 Reference to other sections

See Section 1 for emergency contact information.

See Section 8 for information on appropriate personal protective equipment.

See Section 13 for information on disposal and treatment of waste.

Section 7. HANDLING AND STORAGE

The regulations relating to storage premises apply to workshops where the mixture is handled.

7.1 Precautions for safe handling

Advice on safe handling: Keep container tightly closed. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice.

Hygiene measures: Keep away from food, drink and animal feeding stuffs. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and at the end of workday. Take off all contaminated clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities

Store well-closed containers in a dry and well-ventilated place. Store in the original container.

Keep away from heat and ignition sources. Avoid direct exposure to the sun.

Do not smoke.

7.3 Specific end use(s)

None.

Section 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Exposure limit values

Propane-1,2-diol: Contains no substances with occupational exposure limit values

Derived No Effect Level (DNEL)

	Component	inhalation	Skin contact	Ingestion
End Use	Workers	168 mg/m ³ (LT, SE) 10 mg/m ³ (LT, LE)	106 mg/m ³ (LT, SE)	35 mg/m ³ (LT, SE)
	Consumers	50 mg/m ³ (LT, SE) 10 mg/m ³ (LT, LE)	53 mg/m ³ (LT, SE)	7 mg/m ³ (LT, SE)

LE: Local effects, SE: Systemic effects, LT: Long-term, ST: short-term

Predicted No Effect Concentration (PNEC)

Composant	Propane-1,2-diol
Fresh water	10 mg/l
Sea water	1 mg/l
Water (intermittent release)	10 mg/l
Effects on wastewater treatment plants	199,5 mg/l
Fresh water sediment	20,9 mg/kg
Soil	1,53 mg/kg

dw: dry weight

8.2 Exposure controls

Appropriate engineering controls:

Ensure adequate ventilation. Ensure access to an eye shower.

Respiratory protection:

If ventilation is inadequate, use a respirator protection. Recommended Filter type:A

The vapours are heavier than air and can cause suffocation by lowering the oxygen content.

If risk of splash contact:

Hand Protection:

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). polychloroprene Nitrile rubber butyl-rubber

Eye protection:

Safety glasses with side shields

Skin and body protection:

Wear suitable clothing to protect against splashes and contamination.

Hygiene measures:

Handle in accordance with good industrial hygiene and safety practice. Do not smoke during use.

Personal protective equipment:



Eye protection

Wear protective eyewear (goggles, face shield, or safety glasses).



Skin protection

Wear protective gloves

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information of basic physical and chemical properties

Appearance:

Physical state (20°C):	Liquid
Form:	Liquid
Colour:	Colourless, or, coloured, red, blue, yellow

Odour: slight

Vapour pressure: < 1 hPa (20 °C)

Density: ca. 1,03 - 1,10 g/cm³ (20 °C)

Melting point/range: ca. -13 °C

Boiling point / range: 100-197°C

Density: 1.04 g/cm³

Auto-ignition temperature: >400°C

Decomposition temperature: >200°C

Flash point: > 116 °C

Flammability: Non-flammable product

Upper explosion limit/ upper flammability limit	28%
Lower explosion limit/ lower flammability limit	3%

Oxidizing properties: Non-oxidizing product

Water solubility: not applicable

9.2 Other information

not determined

Section 10. STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions of storage and handling.

10.2 Chemical stability

Product stable at room temperature

10.3 Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

Reaction type: polymerisation

10.4 Conditions to avoid

Avoid moisture. Exposure to light. Exposure to air. Keep away from heat and sources of ignition. Keep away from direct sunlight.

10.5 Incompatible materials

Strong acids, Strong bases, Strong oxidizing agents

10.6 Hazardous decomposition materials

Hazardous decomposition products: Aldehydes, Alcohols, Organic acids

Section 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity:

Component : propane-1,2,-diol

Oral : DL50 : 7 712 mg/kg (rat)

Inhalation: CL50 : > 2,5 mg/l (en aérosol ; rat, 6h)

Skin : DL50 : > 3500 mg/kg (souris)

Corrosion / skin irritation and severe eye damage / eye irritation:

No skin irritation (Rabbit) (OECD Test Guideline 404)

No eye irritation (Rabbit) (OECD Test Guideline 405)

Respiratory or skin sensitization:

Does not cause skin sensitisation. (Maximisation Test; Guinea pig) (OECD Test Guideline 406)

Mutagenicity on germ cells

Not classified on the basis of available information.

Carcinogenicity

Not classified on the basis of available information.

Reproductive toxicity

Not classified on the basis of available information.

Specific target organ toxicity (STOT), Repeated dose toxicity

May cause damage to organs through prolonged or repeated exposure.

Aspiration toxicity

Not classified on the basis of available information

Section 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Component	propane-1,2,-diol
Fish CL50, 96h Species Method	72 860 mg/l Pimephales promelas; static test; EPA OPP 72-1
Aquatic invertebrates CL50, 48h Species Method	> 100 mg/l Daphnia magna OECD Test Guideline 202
Algae CE50, 96h Species Method	6500 - 13000 mg/l Selenastrum capricornutum End point: Growth rate
Bacteria EC50, 0.5h Species Method	> 1995 mg/l activated sludge; ISO 8192 Read-across (Analogy)

12.2 Persistence and degradability

Readily biodegradable.

12.3 Bioaccumulation potential

Bioaccumulation is unlikely.

12.4 Mobility in the soil

Groundwater contamination is possible., The product is water soluble.

12.5 Results of PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulative and toxic (PBT) or very persistent, very bioaccumulative (vPvB).

12.6 Endocrine Disrupting properties

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.

12.7 Other adverse effects

Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.
Biochemical Oxygen Demand (BOD) : 1 245 mg/g

Section 13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Product:	Disposal together with normal waste is not allowed. Special disposal required according to local regulations. Do not let product enter drains. Contact waste disposal services.
Contaminated packaging:	Empty contaminated packagings thoroughly. They can be recycled after thorough and proper cleaning. If recycling is not practicable, dispose of in compliance with local regulations.
European Waste Catalogue Number:	No waste code according to the European Waste Catalogue can be assigned for this product, as the intended use dictates the assignment. The waste code is established in consultation with the regional waste disposer.

Section 14. TRANSPORT INFORMATION

Not dangerous goods for ADR, RID, IMDG and IATA.

14.1 Label

Not applicable.

14.2 RID / ADR

Not applicable.

14.3 AND

Not applicable.

14.4 IMDG

Not applicable.

14.5 IATA-DGR

Not applicable.

14.6 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable.

Section 15. REGULATORY INFORMATION

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

European legislation

- **CLP Regulation:**

- *Regulation (CE) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/CE and 1999/45/EC and amending Regulation (CE) No 1907/2006, with amendments.*

- **REACH regulation:**

- *Regulation (CE) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/CE and repealing Council Regulation (CEE) No 793/93 and Commission Regulation (CE) No 1488/94 as well as Council Directive 76/769/EEC and Directives Commission 91/155/CEE, 93/67/CEE, 93/105/EC and 2000/21/CE, with amendments.*

- **REACH (article 59)** – Candidate list of substance of very high concern for authorisation : **not applicable**
- **REACH (Annex XIV)** – List of substances subject to authorisation : **not applicable**
- **REACH (Annex XVII)** – Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles: **not applicable**

15.2 Chemical safety assessment

Satisfying neither the classification criteria for health and the environment, or the criteria for PBT or vPvB in accordance with Article 14 (3) of the REACH Regulation, specific exposure scenarios have not been developed.

Section 16. OTHER INFORMATION

16.1 SDS update

Revision date: **Januray 2023** – Revision index: **4**

II Nature of change:

SDS sections that have been updated	Type
1.2 Uses	Use reserved for industrialists and professionals
6.2 Precautions for environmental protection	Protection Supplements
9.1 Information of basic physical and chemical properties	Add flammability
10.4 Stability and responsiveness	Additional information on conditions to be avoided
11.1 Information on toxicological effects	New results
12 Ecological information	Add
15.1 Regulatory Information	Regulation

16.2 Abbreviations and acronyms

VLE: Threshold Limit Value, maximum concentration that can be achieved for up to 15 minutes, in the workplace

VME: exposure, maximum permissible average concentration of 8 hours, 40 hours per week in the workplace

TLV: Threshold Limit Value

TWA: Time Weighted Average, average concentration not to exceed a period of 6 hours 40 hours per week

DNEL: Derived No Effect Level (Derived No Effect)

PNEC: Predicted No Effect Concentration

NOAEL: No Observed Adverse Effect Level

LOAEL: Lowest Observed Adverse Effect Level

LD50: Lethal Dose 50 = ingested or injected dose killing 50% of the tested population

LC50: Lethal Concentration 50 = concentration causing the death of 50% of the test population

CSL: Cardiac Sensitisation Threshold Limit

STOT: Specific Target Organ Toxicity

GWP: Global Warming Potential

ODP: Ozone Destruction Potential

PBT: Persistent, Bioaccumulative, Toxic

vPvB: very Persistent and very Bioaccumulative

ADR: European Agreement concerns the International Carriage of Dangerous Goods by Road

RID: Regulations concerning the international carriage of dangerous goods by rail

ADN: European Agreement concerning the International Carriage of Goods by Inland Waterways

IMDG: International Maritime Dangerous Goods code

IATA: International Air Transport Association

16.3 Full text of relevant H-Statements

H302: Harmful if swallowed.

H373: May cause damage to organs through prolonged or repeated exposure.

NOTE: In case of formulations or mixtures, make sure that no new dangers can arise.

The information given in this sheet are given in good faith and based on our knowledge of the product, at the date of publication.

The user's attention is drawn to the risks incurred when a product is used for purposes other than those for which it is intended. This sheet shall only be used and reproduced for prevention and security. The list of laws, regulations and administrative cannot be considered exhaustive. It is the recipient of the product to refer to all official documents concerning the use, possession and handling of the product for which it is responsible.

The user must also bring to the attention of those who may come into contact with the product (usage, storage containers, and other processes) all information necessary to safety, protection of health and environment, by providing them with the safety data sheet.

ANNEXE SCENARIOS D'EXPOSITION

(in accordance with Annex II of Regulation (EC) No 1907/2006 (REACH) and its amendments)

MEG

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No.	Short title	REACH Auth. No.:/ REACH AuthAp pC. No.	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Use as an intermediate	NA	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 15	6a	NA	ES5
2	Distribution of substance	NA	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1	NA	ES10
3	Formulation & (re)packing of substances and mixtures	NA	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	NA	ES12
4	Polymer production	NA	3	NA	NA	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 15	6c	NA	ES262
5	Production of rigid foam	NA	21	NA	32	NA	8f	NA	ES43
6	Use in coatings	NA	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 10, 13, 15	4	NA	ES16
7	Use in coatings	NA	21	NA	9a, 15, 18, 31	NA	8d	NA	ES148
8	Use in coatings/adhesives/sealants/foams/polymer processing	NA	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 14, 15, 19	8d	NA	ES18
9	Use in adhesives and sealants	NA	21	NA	1	NA	8c	NA	ES31
10	Use in cleaning agents	NA	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 10, 13	4	NA	ES35
11	Use in cleaning agents	NA	22	NA	NA	1, 2, 3, 4, 8a, 8b, 10, 11, 13	8a	NA	ES38
12	Use in agrochemicals	NA	22	NA	NA	1, 2, 4, 8a, 8b, 9, 11, 13	8d	NA	ES236
13	Use as lubricants	NA	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18	4	NA	ES108
14	Use as Functional Fluids	NA	3	NA	NA	1, 2, 3, 4, 8a, 8b, 9	7	NA	ES241
15	Use as Functional Fluids	NA	22	NA	NA	1, 2, 3, 8a, 9, 20	9b	NA	ES243
16	Use in heat transfer and hydraulic fluids	NA	21	NA	16, 17	NA	9b	NA	ES266

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17	Use in laboratories	NA	3	NA	NA	15	2, 4	NA	ES116
18	Use in laboratories	NA	22	NA	NA	15	8a	NA	ES118
19	Use in metal working fluids / rolling oils	NA	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 17	4	NA	ES111
20	Use in metal working fluids / rolling oils	NA	22	NA	NA	1, 2, 3, 5, 8a, 8b, 9, 10, 11, 13, 17	8a	NA	ES128
21	Use as water treatment chemicals	NA	3	NA	NA	1, 2, 3, 4, 8a, 8b, 13	3	NA	ES120
22	Use as a process chemical	NA	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 13, 14, 15	4	NA	ES143
23	Polymer production use in foams, in coatings, in adhesives, in sealants.	NA	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15	6c	NA	ES37

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1. Short title of Exposure Scenario 1: Use as an intermediate

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)
Activity	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2.1 Contributing scenario controlling environmental exposure for: ERC6a

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,002 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,1 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)

releases to soil Organizational measures to prevent/limit release from the site	Common practices vary across sites thus conservative process release estimates used.			
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15				
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.		
	Physical Form (at time of use)	Liquid, low fugacity		
Amount used	n.a. in tier 1 TRA MODEL			
Frequency and duration of use	Exposure duration per day	< 8 h		
	Frequency of use	< 240 days/year		
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)		
	Exposed skin area	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9)		
	Exposed skin area	Two hands 960 cm² (PROC8a)		
Other operational conditions affecting workers exposure	Indoor use			
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)			
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)			
3. Exposure estimation and reference to its source				
Environment				
ECETOC TRA worker v3. ESVOC spERC 6.1a.v1 has been used to evaluate the exposure for the environment.				
Workers				
PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA Version 2 with modifications has been used				
Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m3	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m³	0,22
PROC4, PROC8b, PROC9, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC4,	---	Worker - dermal, long-	6,86mg/kg bw/day	0,06

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PROC8b, PROC9		term - systemic		
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

Please note that modified version has been used (see exposure estimates).

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 2: Distribution of substance

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC1: Manufacture of substances
Activity	Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC1

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	6667 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,001 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,001 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,001 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release	

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Organizational measures to prevent/limit release from the site	estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin area	Two hands 960 cm² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 1.1b.v1 has been used to evaluate the exposure for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC8b, PROC9, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b,	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06

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PROC9				
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 3: Formulation & (re)packing of substances and mixtures

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations
Activity	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC2

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,03
	Maximum daily site tonnage (kg/day):	100000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,01 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to	Air	No air emission controls required; required removal

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prevent release		efficiency is 0%.
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
Organizational measures to prevent/limit release from the site	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC14)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 2.2.v1 has been used to evaluate the exposure for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC5	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22

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PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 4: Polymer production

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC6: Calendering operations PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling environmental exposure for: ERC6c

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,2 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,01 %
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
Common practices vary across sites thus conservative process release		

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Organizational measures to prevent/limit release from the site	estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC15		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm² (PROC2, PROC4, PROC5, PROC8b, PROC9)
	Exposed skin area	Two hands 960 cm² (PROC6, PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC6)	
	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOG spERC 4.20 v1 has been used to evaluate the exposure for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC5	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC5, PROC6, PROC8b,	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37

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PROC9, PROC15				
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC6	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 5: Production of rigid foam

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC32: Polymer preparations and compounds
Environmental Release Categories	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC8f

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor: 10
	Other data.Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	15 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,5 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)

2.2 Contributing scenario controlling consumer exposure for: PC32

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.
	Physical Form (at time of use)	liquid
Amount used	Amount used per event	0,825 kg
Frequency and duration of use	Exposure duration	30 min
Human factors not influenced by risk management	Exposed skin area	Hands and forearms. 1900 cm²
Other given operational conditions affecting consumers exposure	Indoor use	
	Room size	57,5 m3
	Temperature	25 °C

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	Ventilation rate per hour	1,5
	Covers use under typical household ventilation.	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3.

Consumers

PC32: ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC32	---	Consumer - inhalative, long-term - systemic	0,06mg/m ³	0,009
PC32	---	Consumer - dermal, long-term - systemic	0,007mg/kg bw/day	0,008

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

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1. Short title of Exposure Scenario 6: Use in coatings

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	1
	Maximum daily site tonnage (kg/day):	39945 kg
Frequency and duration of use	Continuous exposure	220 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	2 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to	Air	Treat air emission to provide a typical removal

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prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		efficiency of (%): (Efficiency: 95 %)
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Wet scrubber for elimination of volatile components from waste gases, or, Filtration aids

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC10, PROC13, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		600 mL/min (PROC7)
	Regular inspection and maintenance of equipment and machines.(PROC7)	
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Frequency of use	240 days/year(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC5, PROC8b, PROC13)
	Exposed skin area	Whole body (PROC7)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead. Regular inspection and maintenance of equipment and machines. Clean equipment and the work area every day.(PROC7)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	
	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)	

3. Exposure estimation and reference to its source

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Environment

ECETOC TRA worker v3. CEPE spERC 4.1b.v1 has been used to evaluate the exposure for the environment.

Workers

PROC7: RISKOFDERM

PROC7: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC13, PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC5, PROC8b, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m ³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/m ³	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m ³	0,74
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distribution. PROC7.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC7

Please note that modified version has been used (see exposure estimates).

Scaling for PROC7 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC7 (inhalation) <https://www.stoffenmanager.nl/default.aspx>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 7: Use in coatings

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC9a: Coatings and paints, thinners, paint removers PC15: Non-metal-surface treatment products PC18: Ink and toners PC31: Polishes and wax blends
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Continuous process
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor: 10
	Other data.Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	2 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	initial release prior to RMM, .	
	Air	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 95 %)
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)

2.2 Contributing scenario controlling consumer exposure for: PC9a: Waterborne wall paint, PC15: Waterborne wall paint

This contributing scenario is intended to represent a reasonable worst-case scenario

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.
	Physical Form (at time of use)	liquid
Amount used		1,25 kg
Frequency and duration of use	Application duration	120 min

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	Non spray applications	
	Exposure duration per day	132 min
	Frequency of use	1 days/year
Human factors not influenced by risk management	Exposed skin area	Hands and forearms. 1900 cm ²
Other given operational conditions affecting consumers exposure	Indoor use	
	Room size	20 m ³
	Temperature	25 °C
	Ventilation rate per hour	0,6
	Mass transfer rate	0,331 m/min
	Release area	10 m ²
	Release duration	7200 sec

2.3 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can, PC15: Aerosol spray can

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.
	Physical Form (at time of use)	liquid
Frequency and duration of use	Spray Duration	15 min
	Exposure duration per day	15 min
	Frequency of use	2 days/year
Human factors not influenced by risk management	Exposed skin area	Hands and forearms. 1900 cm ²
Other given operational conditions affecting consumers exposure	Indoor use	
	Room size	34 m ³
	Temperature	25 °C
	Ventilation rate per hour	1,5
	Release duration	900 sec
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Ensure spraying away from persons.

2.4 Contributing scenario controlling consumer exposure for: PC18: Refilling of toners

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.
	Physical Form (at time of use)	liquid
Amount used		0,05 kg (PC18)
Frequency and duration of use	Application duration	0,3 min
	Exposure duration per day	0,75 min
	Frequency of use	104 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 215 cm ²
Other given operational conditions affecting consumers	Indoor use	
	Temperature	25 °C

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exposure	Ventilation rate per hour	0,5
	Release area	20 cm ²
	Mass transfer rate	0,331 m/min

2.5 Contributing scenario controlling consumer exposure for: PC18: Printing Process

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5%.
	Physical Form (at time of use)	liquid
Amount used		0,016 kg
Frequency and duration of use	Application duration	600 min
	Exposure duration per day	600 min
	Frequency of use	365 days/year
Other given operational conditions affecting consumers exposure	Indoor use	
	Room size	25 m ³
	Temperature	25 °C
	Ventilation rate per hour	0,6

2.6 Contributing scenario controlling consumer exposure for: PC31: Polishes, wax / cream (floor, furniture, shoes)

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2,5%
	Physical Form (at time of use)	liquid
Amount used	Amount used per event	0,55 kg
Frequency and duration of use	Application duration	900 min
	Non spray applications	
	Exposure duration per day	240 min
	Frequency of use	1 days/year
Human factors not influenced by risk management	Exposed skin area	Palms of both hands 430 cm ²
Other given operational conditions affecting consumers exposure	Indoor use	
	Room size	58 m ³
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Release area	22 m ²
	Mass transfer rate	4740 m/min
	Release duration	7200 sec

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. CEPE spERC 8a.n.v1 has been used to evaluate the exposure for the environment.

Consumers

PC9a: Aerosol spray can, PC15: Aerosol spray can, PC31: Polishes, wax / cream, PC18: Refilling of toners, PC18:

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Printing Process, PC9a: Waterborne wall paint, PC15: Waterborne wall paint: ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC9a: Waterborne wall paint, PC15: Waterborne wall paint	---	Consumer-inhalative, long-term - local and systemic.	0,72mg/m ³	0,1
PC9a: Waterborne wall paint, PC15: Waterborne wall paint	---	Consumer - dermal, long-term - systemic	2,77mg/kg bw/day	0,05
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	Consumer-inhalative, long-term - local and systemic.	0,26mg/m ³	0,04
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	Consumer - dermal, long-term - systemic	1,15mg/kg bw/day	0,02
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer oral, long term - systemic	0,13mg/kg bw/day	< 1
PC18: Refilling of toners	---	Consumer-inhalative, long-term - local and systemic.	---	< 1
PC18: Refilling of toners	---	Consumer - dermal, long-term - systemic	0,008mg/kg bw/day	0,0002
PC18: Printing Process	---	Consumer-inhalative, long-term - local and systemic.	1,29mg/m ³	0,18
PC31: Polishes, wax / cream	---	Consumer-inhalative, long-term - local and systemic.	3,93mg/m ³	0,56
PC31: Polishes, wax / cream	---	Consumer - dermal, long-term - systemic	2,12mg/kg bw/day	0,04

Relevant for section 2.5: Dermal exposure is not considered to be relevant.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

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1. Short title of Exposure Scenario 8: Use in coatings/adhesives/sealants/foams/polymer processing

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems
Activity	Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Continuous process
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	2 %

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	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	Treat air emission to provide a typical removal efficiency of (%): (Efficiency: 95 %)
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
Conditions and measures related to external treatment of waste for disposal	Waste treatment	Wet scrubber for elimination of volatile components from waste gases, or, Filtration aids
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC14, PROC15, PROC19		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		50 mL/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11, PROC19)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Exposure duration per day	< 15 min(Critical for: PROC19)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10)
	Exposed skin area	Hands and forearms. 1980 cm ² (PROC19)
	Exposed skin area	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	100 - 1000 m ³ (PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a, PROC10)	
	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Regular inspection and maintenance of equipment and machines. Ensure that the task is not carried out by more than one worker. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day. Ensure that the task is not carried out overhead.(PROC11)	
Conditions and measures related to personal protection, hygiene	If no LEV: Wear respiratory protection(PROC8a, PROC10)	

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and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC10, PROC11, PROC13, PROC19)
	Wear respiratory protection. (Efficiency: 40 %)(PROC11)
	In case no respiratory protection is used, a LEV with adequate effectiveness is required.(PROC11)
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. CEPE spERC 8a.n.v1 has been used to evaluate the exposure for the environment.

Workers

PROC11: RISKOFDERM

PROC11: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15, PROC19: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC10, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m ³	0,74
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC5, PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m ³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03
PROC19	---	Worker - inhalative, long-term - local and systemic.	6,47mg/m ³	0,18
PROC19	---	Worker - dermal, long-term - systemic	14,14mg/kg bw/day	0,13

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The exposure estimate represents the 75th percentile of the exposure distribution. PROC11.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC11

Please note that modified version has been used (see exposure estimates).

Scaling for PROC11 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC11 (inhalation) <https://www.stoffenmanager.nl/default.as>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 9: Use in adhesives and sealants

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC1: Adhesives, sealants
Environmental Release Categories	ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix

2.1 Contributing scenario controlling environmental exposure for: ERC8c

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,075%
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor: 10
	Other data.Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	15 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)

2.2 Contributing scenario controlling consumer exposure for: PC1

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 0,075%
	Physical Form (at time of use)	liquid
Amount used		9000 g/day
Frequency and duration of use	Application duration	75 min
	Exposure duration	75 min
	Frequency of use	2 hours/year
Human factors not influenced by risk management	Exposed skin area	Fingers of one hand 110 cm²
Other given operational	Indoor use	

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conditions affecting consumers exposure	Room size	58 m3
	Temperature	25 °C
	Ventilation rate per hour	0,5
	Covers use under typical household ventilation.	
	Mass transfer rate	4740 m/min
	Release area	4 m2
	Release duration	4500 sec

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3.

Consumers

PC1: ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC1	---	Consumer-inhalative, long-term - local and systemic.	4,1mg/m ³	0,59
PC1	---	Consumer - dermal, long-term - systemic	0,26mg/kg bw/day	0,005

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

The ConsExpo model has been used to estimate consumer exposures unless otherwise indicated.

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1. Short title of Exposure Scenario 10: Use in cleaning agents

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

2.1 Contributing scenario controlling environmental exposure for: ERC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,000011
	Maximum daily site tonnage (kg/day):	50 kg
Frequency and duration of use	Continuous exposure	220 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	100 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)

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releases to soil Organizational measures to prevent/limit release from the site	Common practices vary across sites thus conservative process release estimates used.
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2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC10, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		600 mL/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin area	Whole body (PROC7)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead. Ensure control measures are regularly inspected and maintained. Clean equipment and the work area every day.(PROC7)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13)	
	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. AISE spERC 4.1 has been used to evaluate the exposure for the environment.

Workers

PROC7: RISKOFDERM

PROC7: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
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PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC8b	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m ³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/m ³	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m ³	0,74
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distribution. PROC7.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC7

Please note that modified version has been used (see exposure estimates).

Scaling for PROC7 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC7 (inhalation) <https://www.stoffenmanager.nl/default.aspx>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 11: Use in cleaning agents

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems
Activity	Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,00075
	Maximum daily site tonnage (kg/day):	1580 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	100 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

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releases to soil
Organizational measures to prevent/limit release from the site

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC11, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
	Frequency of use	< 240 days/year(except PROC11)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10)
	Exposed skin area	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide local exhaust ventilation (LEV). (Efficiency: 80 %)(PROC8a, PROC10)	
	Provide extract ventilation to points where emissions occur.(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out by more than one worker. Ensure that the task is not carried out overhead. Ensure control measures are regularly inspected and maintained. Clean equipment and the work area every day.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a, PROC10)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC10, PROC11, PROC13)	
	If no LEV: Wear respiratory protection. (Efficiency: 40 %)(PROC11)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. AISE spERC 8a.1 has been used to evaluate the exposure for the environment.

Workers

PROC11: RISKOFDERM

PROC11: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC10, PROC13: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
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PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC10	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC8b, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m ³	0,74
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m ³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51

The exposure estimate represents the 75th percentile of the exposure distribution. PROC11.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC11

Please note that modified version has been used (see exposure estimates).

Scaling for PROC11 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC11 (inhalation) <https://www.stoffenmanager.nl/default.as>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 12: Use in agrochemicals

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems
Activity	Use as an agrochemical excipient for application by manual or machine spraying, smokes and fogging; including equipment clean-downs and disposal.

2.1 Contributing scenario controlling environmental exposure for: ERC8d

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	100 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
initial release prior to RMM, Regional only.		
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 0 %)
	Common practices vary across sites thus conservative process release estimates used.	

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2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9, PROC11, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
	Exposed skin area	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a)	
	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out by more than one worker. Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear respiratory protection. (Efficiency: 40 %)(PROC11)	
	In case no respiratory protection is used, a LEV with adequate effectiveness is required.(PROC11)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC11, PROC13)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ECPA spERC 8d.2.v1 has been used to evaluate the exposure for the environment.

Workers

PROC11: RISKOFDERM

PROC11: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC4, PROC8a, PROC8b, PROC9, PROC13: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
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PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC4, PROC8b, PROC9, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m ³	0,74
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m ³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51

The exposure estimate represents the 75th percentile of the exposure distribution. PROC11.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC11

Please note that modified version has been used (see exposure estimates).

Scaling for PROC11 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC11 (inhalation) <https://www.stoffenmanager.nl/default.as>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 13: Use as lubricants

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC7: Industrial spraying PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process PROC18: Greasing at high energy conditions
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

2.1 Contributing scenario controlling environmental exposure for: ERC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,0001
	Maximum daily site tonnage (kg/day):	5000 kg
Frequency and duration of use	Continuous exposure	20 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,03 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,1 %
Technical conditions and measures at process level to prevent release	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.

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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		600 mL/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm² (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin area	Whole body (PROC7)
	Exposed skin area	Two hands 960 cm² (PROC8a, PROC10, PROC17, PROC18)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC17, PROC18)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out overhead. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC7)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13, PROC17, PROC18)	
	If no LEV: Wear respiratory protection(PROC8a)	
3. Exposure estimation and reference to its source		
Environment		
ECETOC TRA worker v3. ESVOC spERC 4.6a.v1 has been used to evaluate the exposure for the environment.		
Workers		
PROC7: StoffenManager (inhalation exposure)		

ASCAGEL MEG CONCENTRATES BITREX

PROC7: RISKOFDERM

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18:
ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC17, PROC18	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC8b, PROC9	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m ³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/kg bw/day	0,52
PROC8a, PROC18	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m ³	0,74
PROC10, PROC17	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distribution. PROC7.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Scaling for PROC7 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC7 (inhalation) <https://www.stoffenmanager.nl/default.aspx>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 14: Use as Functional Fluids

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
Environmental Release Categories	ERC7: Industrial use of substances in closed systems
Activity	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

2.1 Contributing scenario controlling environmental exposure for: ERC7

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,00001
	Maximum daily site tonnage (kg/day):	500 kg
Frequency and duration of use	Continuous exposure	20 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,1 %
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
Common practices vary across sites thus conservative process release estimates used.		

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prevent/limit release from the site

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV:	
	Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOG spERC 7.13a.v1 has been used to evaluate the exposure for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC8b, PROC9	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-	13,71mg/kg bw/day	0,13

ASCAGEL MEG CONCENTRATES BITREX

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 15: Use as Functional Fluids

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	ERC9b: Wide dispersive outdoor use of substances in closed systems
Activity	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.

2.1 Contributing scenario controlling environmental exposure for: ERC9b

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	5 %
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

ASCAGEL MEG CONCENTRATES BITREX

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC9, PROC20

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC9, PROC20)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV:	
	Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3.

Workers

PROC1, PROC2, PROC3, PROC8a, PROC9, PROC20: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC20	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC2	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC9	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m ³	0,74
PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC20	---	Worker - dermal, long-	1,71mg/kg bw/day	0,02

ASCAGEL MEG CONCENTRATES BITREX

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 16: Use in heat transfer and hydraulic fluids

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC16: Heat transfer fluids PC17: Hydraulic fluids
Environmental Release Categories	ERC9b: Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC9b

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,002
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Continuous release
Environment factors not influenced by risk management	Other data.Other information	Local freshwater dilution factor: 10
	Other data.Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	5 %
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)

2.2 Contributing scenario controlling consumer exposure for: PC16, PC17

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	Liquid, low fugacity
Frequency and duration of use	Exposure duration per day	< 15 min
Human factors not influenced by risk management	Exposed skin area	Two hands 960 cm²
Other given operational conditions affecting consumers exposure	Indoor use	
	Assumes activities are at ambient temperature.	

ASCAGEL MEG CONCENTRATES BITREX

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3.

Consumers

PC16, PC17: Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC16, PC17	---	Consumer-inhalative, long-term - local and systemic.	1,93mg/m3	0,28
PC16, PC17	---	Consumer - dermal, long-term - systemic	4,11mg/kg bw/day	0,08

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 17: Use in laboratories

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC15: Use as laboratory reagent
Environmental Release Categories	ERC2: Formulation of preparations ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Use of the substance within laboratory settings, including material transfers and equipment cleaning

2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,0005
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	50 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	50 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h

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	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm² (PROC15)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3.

Workers

PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m³	0,37
PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 18: Use in laboratories

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC15: Use as laboratory reagent
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems
Activity	Use of small quantities within laboratory settings, including material transfers and equipment cleaning

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,0005
	Maximum daily site tonnage (kg/day):	5479 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	50 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	50 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
initial release prior to RMM, Regional only.		
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year

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Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC15)
Other operational conditions affecting workers exposure	Indoor use	Assumes activities are at ambient temperature.

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 8.17.v1 has been used to evaluate the exposure for the environment.

Workers

PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 19: Use in metal working fluids / rolling oils

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) 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 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Activity	Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

2.1 Contributing scenario controlling environmental exposure for: ERC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,0001
	Maximum daily site tonnage (kg/day):	5000 kg
Frequency and duration of use	Continuous exposure	20 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,0003 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0,1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
initial release prior to RMM, Regional only.		

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Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		0,6 L/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10, PROC17)
	Exposed skin area	Whole body (PROC7)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC17)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC7)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13, PROC17)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)	
	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 4.7a.v1 has been used to evaluate the exposure for the environment.

ASCAGEL MEG CONCENTRATES BITREX

Workers

PROC7: StoffenManager (inhalation exposure)

PROC7: RISKOFDERM

PROC1, PROC2, PROC3, PROC8a, PROC17: ECETOC TRA worker v3

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC17	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC5, PROC8b, PROC9	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m ³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/kg bw/day	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m ³	0,74
PROC10, PROC17	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distribution. PROC7.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC7

Please note that modified version has been used (see exposure estimates).

Scaling for PROC7 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC7 (inhalation) <https://www.stoffenmanager.nl/default.aspx>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 20: Use in metal working fluids / rolling oils

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC17: Lubrication at high energy conditions and in partly open process
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems
Activity	Covers the use in formulated MWFs including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils.

2.1 Contributing scenario controlling environmental exposure for: ERC8a

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	0,1
	Fraction used at the main local source.	0,0005
	Maximum daily site tonnage (kg/day):	1370 kg
Frequency and duration of use	Continuous exposure	365 days/year, Wide dispersive use
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	1,5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	5 %
Technical conditions and measures at process level to prevent release	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.

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Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Estimated substance removal from wastewater via domestic sewage treatment (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		0,05 L/min (PROC11)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC11)
	Exposure duration per day	< 150 min(Critical for: PROC11)
	Frequency of use	< 240 days/year(except PROC11)
	Frequency of use	4 - 5 days/week(Critical for: PROC11)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm² (PROC2, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin area	Two hands 960 cm² (PROC8a, PROC10, PROC17)
	Exposed skin area	Whole body (PROC11)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC11)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 80 %)(PROC8a, PROC10)	
	Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).(PROC11)	
	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC17)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is not carried out by more than one worker. Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a, PROC10, PROC17)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC10, PROC11, PROC13, PROC17)	
	Wear respiratory protection. (Efficiency: 40 %)(PROC11)	
	In case no respiratory protection is used, a LEV with adequate effectiveness is required.(PROC11)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC11)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 8.7c.v1 has been used to evaluate the exposure for the environment.

Workers

ASCAGEL MEG CONCENTRATES BITREX

PROC11: RISKOFDERM

PROC11: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a, PROC10, PROC17	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC5, PROC8b, PROC9, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,88mg/m ³	0,74
PROC5, PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC10, PROC17	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC11	---	Worker - inhalative, long-term - local and systemic.	14,05mg/m ³	0,4
PROC11	---	Worker - dermal, long-term - systemic	53,75mg/kg bw/day	0,51

The exposure estimate represents the 75th percentile of the exposure distribution. PROC11.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC11

Please note that modified version has been used (see exposure estimates).

Scaling for PROC11 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC11 (inhalation) <https://www.stoffenmanager.nl/default.as>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 21: Use as water treatment chemicals

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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
Environmental Release Categories	ERC3: Formulation in materials
Activity	Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems.

2.1 Contributing scenario controlling environmental exposure for: ERC3

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,00003
	Maximum daily site tonnage (kg/day):	100 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	5 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	95 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0 %
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	initial release prior to RMM, Regional only.	
	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
Common practices vary across sites thus conservative process release estimates used.		

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2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC8b, PROC13)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC13)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOG spERC 3.22a.v1 has been used to evaluate the exposure for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC13: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC8b	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC13	---	Worker - inhalative, long-	25,87mg/m ³	0,74

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		term - local and systemic.		
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4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>
Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

ASCAGEL MEG CONCENTRATES BITREX

1. Short title of Exposure Scenario 22: Use as a process chemical

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

2.1 Contributing scenario controlling environmental exposure for: ERC4

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	2 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	0 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,001 %
	initial release prior to RMM, Regional only.	
Technical conditions and measures at process level to prevent release Technical onsite conditions and measures to reduce or limit	Air	No air emission controls required; required removal efficiency is 0%.
	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal

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discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site		efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	Liquid, low fugacity
Amount used	n.a. in tier 1 TRA MODEL	
Frequency and duration of use	Exposure duration per day	< 8 h
	Frequency of use	< 240 days/year
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Exposed skin area	Two hands 960 cm ² (PROC8a)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
Conditions and measures related to personal protection, hygiene and health evaluation	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5, PROC13)	
	If no LEV: Wear respiratory protection(PROC8a)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 4.21a.v1 has been used to evaluate the exposure for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15:
ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC5, PROC8b, PROC9,	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37

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PROC14, PROC15				
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m ³	0,74
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures. Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For further information on the assessment method, see: <http://www.ecetoc.org/tra>

Please note that modified version has been used (see exposure estimates).

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.

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1. Short title of Exposure Scenario 23: Polymer production use in foams, in coatings, in adhesives, in sealants.

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) 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 PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent
Environmental Release Categories	ERC6c: Industrial use of monomers for manufacture of thermoplastics

2.1 Contributing scenario controlling environmental exposure for: ERC6c

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
Amount used	Fraction of EU tonnage used in region:	1
	Fraction used at the main local source.	0,015
	Maximum daily site tonnage (kg/day):	50000 kg
Frequency and duration of use	Continuous exposure	300 days/year, Continuous release
Environment factors not influenced by risk management	Other data. Other information	Local freshwater dilution factor: 10
	Other data. Other information	Local marine water dilution factor: 100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,2 %
	initial release prior to RMM, .	
	Emission or Release Factor: Water	1 %
	initial release prior to RMM, .	
	Emission or Release Factor: Soil	0,01 %
initial release prior to RMM, Regional only.		
Technical conditions and measures at process level to	Air	No air emission controls required; required removal efficiency is 0%.

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prevent release Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil Organizational measures to prevent/limit release from the site	Water	Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): (Degradation effectiveness: 87 %)
	Common practices vary across sites thus conservative process release estimates used.	

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of use)	liquid
Amount used		0,6 L/min (PROC7)
Frequency and duration of use	Exposure duration per day	< 8 h(except PROC7)
	Exposure duration per day	< 6 h(Critical for: PROC7)
	Frequency of use	< 240 days/year(except PROC7)
	Frequency of use	4 - 5 days/week(Critical for: PROC7)
Human factors not influenced by risk management	Exposed skin area	Palm of one Hand 240 cm ² (PROC1, PROC3, PROC15)
	Exposed skin area	Palms of both hands 480 cm ² (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13, PROC14)
	Exposed skin area	Whole body (PROC7)
	Exposed skin area	Two hands 960 cm ² (PROC8a, PROC10)
Other operational conditions affecting workers exposure	Indoor use	
	Assumes activities are at ambient temperature.	
	Room size	1000 m3(PROC7)
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)	
	Provide extraction ventilation at points where emissions occur. (Efficiency: 50 %)(PROC7)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead. Clean equipment and the work area every day. Ensure control measures are regularly inspected and maintained.(PROC7)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no LEV: Wear respiratory protection(PROC8a)	
	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Efficiency: 90 %)(PROC5)	
	Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Efficiency: 90 %)(PROC7, PROC10, PROC13)	
	Wear suitable coveralls to prevent exposure to the skin. (Efficiency: 80 %)(PROC7)	

3. Exposure estimation and reference to its source

Environment

ECETOC TRA worker v3. ESVOC spERC 4.20 v1 has been used to evaluate the exposure for the environment.

Workers

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PROC7: RISKOFDERM

PROC7: StoffenManager (inhalation exposure)

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15: ECETOC TRA Version 2 with modifications has been used

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	Worker - inhalative, long-term - local and systemic.	0,03mg/m ³	0,0007
PROC1, PROC3, PROC15	---	Worker - dermal, long-term - systemic	0,34mg/kg bw/day	0,003
PROC2, PROC8a	---	Worker - inhalative, long-term - local and systemic.	2,59mg/m ³	0,07
PROC2, PROC5, PROC13	---	Worker - dermal, long-term - systemic	1,37mg/kg bw/day	0,01
PROC3	---	Worker - inhalative, long-term - local and systemic.	7,76mg/m ³	0,22
PROC4, PROC5, PROC8b, PROC9, PROC14, PROC15	---	Worker - inhalative, long-term - local and systemic.	12,94mg/m ³	0,37
PROC4, PROC8b, PROC9	---	Worker - dermal, long-term - systemic	6,86mg/kg bw/day	0,06
PROC7	---	Worker - inhalative, long-term - local and systemic.	9,79mg/m ³	0,28
PROC7	---	Worker - dermal, long-term - systemic	54,6mg/m ³	0,52
PROC8a	---	Worker - dermal, long-term - systemic	13,71mg/kg bw/day	0,13
PROC10, PROC13	---	Worker - inhalative, long-term - local and systemic.	25,87mg/m ³	0,74
PROC10	---	Worker - dermal, long-term - systemic	2,74mg/kg bw/day	0,03
PROC14	---	Worker - dermal, long-term - systemic	3,43mg/kg bw/day	0,03

The exposure estimate represents the 75th percentile of the exposure distribution. PROC7.

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

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (<http://cefic.org/en/reach-for-industries-libraries.html>).

Health

For scaling see: <http://www.ecetoc.org/tra> with exception for PROC7

Please note that modified version has been used (see exposure estimates).

Scaling for PROC7 (dermal) <http://www.eurofins.com/riskofderm.aspx>

Scaling for PROC7 (inhalation) <https://www.stoffenmanager.nl/default.aspx>

Additional good practice advice beyond the REACH Chemical Safety Assessment

Use suitable eye protection.