Dr. Grogg Chemie AG
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COVER SHEET FOR THE SAFETY DATA SHEET

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Item number: G390

Trade name: Isopropanol pure

Supplier:
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Emergency number:
24-hour emergency number: 145
Help with poisoning. Tox Info Suisse provides free medical advice round the clock in cases of poisoning or suspected poisoning.

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8032 Zürich
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SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006, as amended

2-PROPANOL (ISOPROPANOL) ACCORDING TO EP

Version 4.0 Print Date 24.11.2026

Revision date / valid from 09.09.2025

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

1.1. Product identifier

Trade name	:	2-PROPANOL (ISOPROPANOL) ACCORDING TO EP
Substance name	:	propan-2-ol
Index-No.	:	603-117-00-0
CAS-No.	:	67-63-0
EC-No.	:	200-661-7
EU REACH-Reg. No.	:	01-2119457558-25-xxxx

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

Use of the Substance/Mixture	:	Identified use: See table in front of appendix for a complete overview of identified uses.
Uses advised against	:	At this moment we have not identified any uses advised against
Remarks	:	Before referring to any Exposure Scenario attached to this Safety Data Sheet please check the grade of the product: the Exposure Scenarios presented are not related to all product grade

1.3. Details of the supplier of the safety data sheet

Company	:	Brenntag Schweizerhall AG Elsässerstrasse 231 CH 4002 Basel
Telephone	:	+41 (0)58 344 80 00
Telefax	:	+41 (0)58 344 82 08
E-mail address	:	doku@brenntag.ch
Responsible/issuing person	:	Abteilung Produktsicherheit

1.4. Emergency telephone number

Emergency telephone number	:	Swiss Toxicological Information Centre CH-8032 ZÜRICH Tel.: +41 (0) 44 251 51 51 National emergency call: 145

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

REGULATION (EC) No 1272/2008			
Hazard class	**Hazard category**	**Target Organs**	**Hazard statements**
Flammable liquids	Category 2	---	H225
Eye irritation	Category 2	---	H319
Specific target organ toxicity - single exposure	Category 3	Central nervous system	H336

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

Most important adverse effects

Human Health	:	See section 11 for toxicological information.
Physical and chemical hazards	:	See section 9/10 for physicochemical information.
Potential environmental effects	:	See section 12 for environmental information.

2.2. Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard symbols :



Signal word : Danger

Hazard statements :

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

Precautionary statements

Prevention :

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261	Avoid breathing vapours/spray.
P280	Wear protective gloves/ eye protection/ face protection.
P243	Take action to prevent static discharges.

Response : P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

		P304 + P340 + P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
Storage	:	P403 + P235	Store in a well-ventilated place. Keep cool.

Hazardous components which must be listed on the label:

• propan-2-ol

2.3. Other hazards

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

Ecological information: 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.

Toxicological information: 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.

Vapors may be heavier than air and may travel along the ground to distant ignition source and flash back. This material is a static accumulator. Even with proper grounding and potential equalization, the material can become electrostatically charged. If a certain charge is present, electrostatic discharge and ignition of flammable air-vapour mixtures can result.
Slightly irritating to respiratory system.

SECTION 3: Composition/information on ingredients

3.1. Substances

Hazardous components	Amount [%]	Classification (REGULATION (EC) No 1272/2008)	
		Hazard class / Hazard category	Hazard statements
propan-2-ol			
Index-No. : 603-117-00-0 CAS-No. : 67-63-0 EC-No. : 200-661-7 EU REACH-Reg. No. : 01-2119457558-25-xxxx	<= 100	Flam. Liq.2 Eye Irrit.2 STOT SE3	H225 H319 H336

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

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice	: Remove from exposure, lie down. Take off all contaminated clothing immediately.
If inhaled	: Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. If unconscious place in recovery position. Consult a physician after significant exposure.
In case of skin contact	: Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician.
In case of eye contact	: Rinse immediately with plenty of water, also under the eyelids, for at least 10 minutes. Consult an eye specialist immediately. Go to an ophthalmic hospital if possible.
If swallowed	: Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Call a physician immediately.

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

Symptoms	: Inhalation of high vapour concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.; See Section 11 for more detailed information on health effects and symptoms.;
Effects	: See Section 11 for more detailed information on health effects and symptoms.

4.3. Indication of any immediate medical attention and special treatment needed

Treatment	: Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	:	Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Unsuitable extinguishing media	:	High volume water jet

5.2. Special hazards arising from the substance or mixture

Specific hazards during firefighting	:	The vapour may be invisible, heavier than air and spread along ground. Vapours may form explosive mixtures with air. Flash back possible over considerable distance.
Hazardous combustion products	:	Carbon monoxide, Carbon dioxide (CO2)

5.3. Advice for firefighters

Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.Wear personal protective equipment.
Further advice	:	Cool closed containers exposed to fire with water spray.Heating will cause a pressure rise - with risk of bursting.Collect contaminated fire extinguishing water separately. This must not be discharged into drains.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	:	Keep away from heat and sources of ignition. Use personal protective equipment. Keep away unprotected persons. Provide adequate ventilation. Avoid contact with skin and eyes. Do not breathe vapours or spray mist.

6.2. Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

6.3. Methods and materials for containment and cleaning up

Methods and materials for containment and cleaning up	:	Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

6.4. Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on personal protective equipment.
See Section 13 for waste treatment information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling	:	Keep container tightly closed. Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Emergency eye wash fountains and emergency showers should be available in the immediate vicinity.
Hygiene measures	:	Keep away from food, drink and animal feedingstuffs. 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

Requirements for storage areas and containers	:	Store in original container. Keep in an area equipped with solvent resistant flooring. Unsuitable materials for containers: Aluminium; polystyrene; ethylene propylene diene rubber; butyl-rubber; natural rubber; cast iron
Advice on protection against fire and explosion	:	Keep away from sources of ignition - No smoking. Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Take measures to prevent the build up of electrostatic charge. Use only in an area containing explosion proof equipment.
Further information on storage conditions	:	Keep tightly closed in a dry and cool place. Keep away from direct sunlight. Keep in a well-ventilated place.
Advice on common storage	:	Incompatible with oxidizing agents. Do not store together with oxidizing and self-igniting products. Keep away from food, drink and animal feedingstuffs.
German storage class	:	3 Flammable liquids
Suitable packaging materials	:	Stainless steel
Unsuitable packaging materials	:	, natural rubber, Butyl rubber, Neoprene, Nitrile rubber.

7.3. Specific end use(s)

Specific use(s)	:	Identified use: See table in front of appendix for a complete overview of identified uses.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Component:	**propan-2-ol**	**CAS-No. 67-63-0**
Derived No Effect Level (DNEL)/Derived Minimal Effect Level (DMEL)		

DNEL

Workers, Long-term - systemic effects, Skin contact	:	888 mg/kg bw/day
DNEL Workers, Long-term - systemic effects, Inhalation	:	500 mg/m3
DNEL Consumers, Long-term - systemic effects, Skin contact	:	319 mg/kg bw/day
DNEL Consumers, Long-term - systemic effects, Inhalation	:	89 mg/m3
DNEL Consumers, Long-term - systemic effects, Ingestion	:	26 mg/kg bw/day

Predicted No Effect Concentration (PNEC)

Fresh water	:	140,9 mg/l
Marine water	:	140,9 mg/l
Intermittent releases	:	140,9 mg/l
Sewage treatment plant (STP)	:	2251 mg/l
Sediment	:	552 mg/kg d.w.
Soil	:	28 mg/kg
Secondary poisoning	:	160 mg/kg food

Other Occupational Exposure Limit Values

Switzerland. OELs. Limit Values at the Workplace, as per SUVA, as amended
If in compliance with the OEL and BEL values, then there should be no risk of reproductive damage.

Switzerland. OELs. Limit Values at the Workplace, as per SUVA, as amended, Time Weighted Average (TWA):
200 ppm, 500 mg/m3

Switzerland. OELs. Limit Values at the Workplace, as per SUVA, as amended, Short Term Exposure Limit (STEL):
400 ppm, 1.000 mg/m3

Biological Exposure Indices

Switzerland. Biological Limit Values in the Workplace (BAT-Werte), as per SUVA, as amended, acetone, Urine

25 mg/l, Sampling time: End of exposure / end of shift.

Switzerland. Biological Limit Values in the Workplace (BAT-Werte), as per SUVA, as amended, acetone, Blood
25 mg/l, Sampling time: End of exposure / end of shift.

8.2. Exposure controls

Appropriate engineering controls

Refer to protective measures listed in sections 7 and 8.

Personal protective equipment

Respiratory protection

Advice	:	In case of insufficient ventilation, wear suitable respiratory equipment. When aerosol or mist is formed use suitable respiratory protection. Recommended Filter type:A Combination filter: A-P2 In case of intensive or longer exposure use self-contained breathing apparatus. Equipment should conform to EN 14387

Hand protection

Advice	:	Protective gloves complying with EN 374. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Protective gloves should be replaced at first signs of wear.
Material	:	Nitrile rubber
Break through time	:	>= 8 h
Glove thickness	:	0,35 mm

Material	:	Fluorinated rubber
Break through time	:	>= 8 h
Glove thickness	:	0,4 mm

Material	:	butyl-rubber
Break through time	:	>= 8 h
Glove thickness	:	0,5 mm

Eye protection

Advice	:	Safety goggles

Skin and body protection

Protecting Clothes	:	Solvent resistant protective clothing

Environmental exposure controls

General advice	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Form	:	liquid
Physical state	:	liquid
Colour	:	colourless, clear
Odour	:	alcohol-like
Odour Threshold	:	No data available
Melting point/ range	:	-89 °C
Boiling point/boiling range	:	82 °C Method: ASTM D1078
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	13 %(V)
Lower explosion limit / Lower flammability limit	:	2 %(V)
Flash point	:	12 °C Method: ASTM D 56
Auto-ignition temperature	:	425 °C Method: ASTM D 2155
Decomposition temperature	:	Decomposition products depend upon temperature,air supply and the presence of other materials.
Self-Accelerating decomposition temperature (SADT)	:	No data available
pH	:	No data available
Viscosity		
Viscosity, dynamic	:	2,43 mPa.s (20 °C) Method: ASTM D 445
Viscosity, kinematic	:	2,66 mm2/s (25 °C) Method: ASTM D 7042
Flow time	:	No data available
Solubility(ies)		
Water solubility	:	completely soluble
Solubility in other solvents	:	No data available

Dissolution Rate	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: 0,05
Dispersion Stability	:	No data available
Vapour pressure	:	41 hPa (20 °C)
Relative density	:	0,786 (20 °C)
Density	:	785 - 786 kg/m3 (20 °C) Method: ASTM D - 4052
Bulk density	:	No data available
Relative vapour density	:	> 1 (Air = 1.0)
Particle characteristics		
Particle size	:	Not applicable
Polymer characteristics	:	No data available

9.2 Other information

Explosives	:	Product is not explosive. Formation of explosive air/vapour mixtures is possible.
Oxidizing properties	:	not oxidising
Evaporation rate	:	1,5 Method: ASTM D3539 (Butyl Acetate = 1)
Molecular weight	:	60,10 g/mol

SECTION 10: Stability and reactivity

10.1. Reactivity

Advice : No decomposition if stored and applied as directed.

10.2. Chemical stability

Advice : Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous reactions : Possible formation of peroxide. Reacts with oxidizing agents.
Note : Formation of explosive air/vapour mixtures is possible.

10.4. Conditions to avoid

Conditions to avoid	:	Heat, flames and sparks.
Thermal decomposition	:	Decomposition products depend upon temperature,air supply and the presence of other materials.

10.5. Incompatible materials

Materials to avoid	:	Strong oxidizing agents, Amines, Aldehydes, alkanolamines, alkalis, Strong acids

10.6. Hazardous decomposition products

Hazardous decomposition products	:	A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

SECTION 11: Toxicological information

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

Component:		**propan-2-ol**	**CAS-No. 67-63-0**
Acute toxicity			
Oral			
LD50	:	5840 mg/kg (Rat) (OECD Test Guideline 401)	
Inhalation			
LC50	:	> 25 mg/l (Rat; 6 h; vapour) (OECD Test Guideline 403)	
Dermal			
LD50	:	13900 mg/kg (Rabbit) (OECD Test Guideline 402)	
Irritation			
Skin			
Result	:	No skin irritation (OECD Test Guideline 404)Degreases the skin which may cause dry and rough. Prolonged or repeated skin contact may result in dermatitis.	
Eyes			
Result	:	Eye irritation (OECD Test Guideline 405)Splashes in eyes may cause strong pain. Vapour acts irritant.	
Sensitisation			

Result	:	not sensitizing (Buehler Test; Dermal; Guinea pig) (OECD Test Guideline 406)

CMR effects

Carcinogenicity

NOEL	:	5.000 ppm (negative, Mouse, male and female)(Inhalation; 0, 500, 2500, 5000 ppm; 78 weeks; Frequency of treatment: 5 days/week)(OECD Test Guideline 451)

CMR Properties

Carcinogenicity	:	Based on available data, the classification criteria are not met.
Mutagenicity	:	In vitro tests did not show mutagenic effects In vivo tests did not show mutagenic effects
Teratogenicity	:	No effects on or via lactation
Reproductive toxicity	:	Based on available data, the classification criteria are not met.

Genotoxicity in vitro

Result	:	negative (Bacterial Reverse Mutation Test; Salmonella typhimurium; with and without metabolic activation) (OECD Test Guideline 471) negative (In vitro gene mutation study in mammalian cells; CHO (Chinese Hamster Ovary) cells; with and without metabolic activation) (OECD Test Guideline 476)

Genotoxicity in vivo

Result	:	negative (In vivo micronucleus test; Mouse, male and female) (intraperitoneal;) (OECD Test Guideline 474)

Teratogenicity

NOAEL Maternal	:	400 mg/kg bw/day
NOAEL Develop.	:	400 mg/kg bw/day (Rat, Sprague-Dawley)(Oral)(OECD Test Guideline 414)No adverse effects

Reproductive toxicity

NOAEL Parent	:	853 mg/kg bw/day (One-Generation Reproduction Toxicity Study; Rat, wistar, male and female)(Oral)(OECD Test Guideline 415)No negative effects.

NOAEL Parent	:	500 mg/kg bw/day (Two-generation reproductive toxicity; Rat, Sprague-Dawley, male and female)(Oral)(OECD Test Guideline 416)No negative effects.

Specific Target Organ Toxicity

Single exposure

Inhalation	:	Target Organs: Central nervous systemMay cause drowsiness or dizziness.

Repeated exposure

Remarks	:	Oral and inhalation repeated exposure studies demonstrated target organ effects in male rats (kidney) and male and female mice (thyroid) by mechanisms of action that are not relevant to humans

Other toxic properties

Aspiration hazard

Aspiration hazard if swallowed - can enter lungs and cause damage.
Aspiration may cause pulmonary oedema and pneumonitis.
Based on available data, the classification criteria are not met.,

11.2. Information on other hazards

Data for the product

Endocrine disrupting properties

Assessment 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.

SECTION 12: Ecological information

12.1. Toxicity

Component:	propan-2-ol	CAS-No. 67-63-0

Acute toxicity

Fish

LC50	:	9.640 mg/l (Pimephales promelas, mortality; 96 h) (flow-through test; OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates

LC50	:	9.714 mg/l (Daphnia magna, mortality; 24 h) (static test; OECD Test Guideline 202)

algae

EC50	:	> 100 mg/l (Scenedesmus subspicatus; 72 h)
LOEC		1000 mg/l (algae; 8 d)

Bacteria

EC50	:	> 100 mg/l (Bacteria) no harming action

12.2. Persistence and degradability

Component:	**propan-2-ol**	**CAS-No. 67-63-0**

Persistence and degradability

Persistence

Result	:	Transformation due to hydrolysis not expected to be significant. Transformation due to photolysis not expected to be significant.

Biodegradability

Result	:	53 % (aerobic; domestic sewage; Related to: O2 consumption; Exposure Time: 5 d)(Directive 67/548/EEC, Annex V, C.5)Readily biodegradable.

12.3. Bioaccumulative potential

Component:	**propan-2-ol**	**CAS-No. 67-63-0**

Bioaccumulation

Result	:	log Kow 0,05 (25 °C)
	:	Bioaccumulation is not expected.

12.4. Mobility in soil

Component:	propan-2-ol	CAS-No. 67-63-0
Mobility		

Water	:	The product is water soluble.
Soil	:	Mobile in soils

12.5. Results of PBT and vPvB assessment

Data for the product
Results of PBT and vPvB assessment

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

Component:	propan-2-ol	CAS-No. 67-63-0
Results of PBT and vPvB assessment		

Result	:	Not persistent, bioaccumulative, and toxic (PBT)., Not very persistent and very bioaccumulative (vPvB).

12.6. Endocrine disrupting properties

Data for the product

Assessment 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

Data for the product
Additional ecological information

Result	:	Do not flush into surface water or sanitary sewer system. Avoid subsoil penetration.

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. This product shall be disposed of or recovered in compliance with Directive 2008/98/EC on waste as lastly amended.
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. Do not burn, or use a cutting torch on, the empty drum. Risk of explosion.
European Waste Catalogue Number	:	No waste code can be defined for this product in accordance with the Ordinance on the Movement of Waste (VeVA), as the intended use dictates the assignment. The waste code is established in consultation with a regional waste disposer, such as: Brenntag Schweizerhall AG Lohnmatte 1 4573 Lohn-Ammannsegg Switzerland Phone: +41 58 344 84 00 infolohn@brenntag.ch

SECTION 14: Transport information

14.1. UN number or ID number

1219

14.2. UN proper shipping name

ADR : ISOPROPANOL
RID : ISOPROPANOL
IMDG : ISOPROPANOL

14.3. Transport hazard class(es)

ADR-Class (Labels; Classification Code; Hazard Identification Number; Tunnel restriction code)	:	3 3; F1; 33; (D/E)
RID-Class (Labels; Classification Code; Hazard Identification Number)	:	3 3; F1; 33
IMDG-Class (Labels; EmS)	:	3 3; F-E, S-D

14.4. Packaging group

ADR : II

RID : II
IMDG : II

14.5. Environmental hazards

Environmentally hazardous according to ADR : no
Environmentally hazardous according to RID : no
Marine Pollutant according to IMDG-Code : no

14.6. Special precautions for user

Not applicable.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Data for the product

CPID : 295252-49

Threshold quantity MAO : 20.000 kg (2015 determined by law SR814.012 Ann. 1 ch. 4)

Ordinance protection of air : LRV (CH): chapter 72 - class 3

Ordinance on Chemical Risik Reduction:
Annex : Annex 1.11: Hazardous liquids

Other regulations : Article 4 paragraph 1bis, Article 4 paragraph 4 of the Youth Employment Protection Ordinance (SR 822.115); articles 5 and 6 of the EAER Ordinance on Hazardous Work for Young People (SR 822.115.2): Young people undergoing basic vocational training may only work with this product (substance/preparation) if the relevant training ordinance makes provision for them to do so with a view to enabling them to achieve their training objectives and if the preconditions for the training plan have been met and the applicable age restrictions have been complied with. Young people who are not undergoing any basic vocational training are not permitted to work with this product (substance/preparation). Young people with a Federal vocational education and training (VET) Certificate or a Federal VET Diploma may carry out hazardous work with this product (substance/preparation) within the profession they have learned. Male and female employees who are under 18 years old are classed as young people.

Component:	propan-2-ol	CAS-No. 67-63-0

EU. Chemicals Subject to Export Notification: Annex 1, Part 1, Regulation 649/2012/EU on export and import of dangerous chemicals, as amended	:	; The substance/mixture does not fall under this legislation.
EU. REACH, Annex XVII, Restrictions on manufacture, placing on the market and use of certain dangerous substances, 1907/2006/EC, as amended	:	Point Nos.: , 40; Listed Point Nos.: , 75; Listed Point Nos.: , 3; Listed
EU. Directive 2012/18/EU on major accident hazards involving dangerous substances, Annex I, as amended	:	Qualifying quantity for the application of Lower-tier requirements: 5.000 tonnes; Part 1: Categories of dangerous substances; Flammable liquids, Categories 2 or 3 not covered by P5a and P5b, The information given is valid if the product is stored below the boiling point and at a pressure of 1013 hPa. Qualifying quantity for the application of Upper-tier requirements: 50.000 tonnes; Part 1: Categories of dangerous substances; Flammable liquids, Categories 2 or 3 not covered by P5a and P5b, The information given is valid if the product is stored below the boiling point and at a pressure of 1013 hPa.

Notification status
propan-2-ol:

Regulatory List	Notification	Notification number
VN INVL	YES	
TH INV	YES	55-1-05311
TH INV	YES	2905.12
PHARM (JP)	YES	
AU AIICL	YES	
TSCA	YES	
EINECS	YES	200-661-7
DSL	YES	
KECI (KR)	YES	KE-29363
ENCS (JP)	YES	(2)-207
ISHL (JP)	YES	2-(8)-319

JEX (JP)	YES	(2)-207
ISHL (JP)	YES	(2)-207
NZIOC	YES	HSR001180
IECSC	YES	
INSQ	YES	
ONT INV	YES	
TCSI	YES	
PICCS (PH)	YES	

15.2. Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

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

H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.

Full text of the Notes referred to under section 3.

Abbreviations and Acronyms

AU AIICL	Australia. Industrial Chemicals Act (AIIC) List
BCF	bioconcentration factor
BOD	biochemical oxygen demand
CAS	Chemical Abstracts Service
CLP	Classification, Labelling and Packaging
CMR	carcinogenic, mutagenic or toxic to reproduction
COD	chemical oxygen demand
DNEL	derived no-effect level
DSL	Canada. Environmental Protection Act, Domestic Substances List
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
ENCS (JP)	Japan. Kashin-Hou Law List
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
IECSC	China. Inventory of Existing Chemical Substances
INSQ	Mexico. National Inventory of Chemical Substances
ISHL (JP)	Japan. Inventory of Industrial Safety & Health
KECI (KR)	Korea. Existing Chemicals Inventory
LC50	median lethal concentration

LOAEC	lowest observed adverse effect concentration
LOAEL	lowest observed adverse effect level
LOEL	lowest observed effect level
NDSL	Canada. Environmental Protection Act. Non-Domestic Substances List
NLP	no-longer polymer
NOAEC	no observed adverse effect concentration
NOAEL	no observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
NZIOC	New Zealand. Inventory of Chemicals
OECD	Organisation for Economic Cooperation and Development
OEL	occupational exposure limit
ONT INV	Canada. Ontario Inventory List
PBT	persistent, bioaccumulative and toxic
PHARM (JP)	Japan. Pharmacopoeia Listing
PICCS (PH)	Philippines. Inventory of Chemicals and Chemical Substances
PNEC	predicted no-effect concentration
REACH Auth. No.:	REACH Authorisation Number
REACH AuthAppC. No.	REACH Authorisation Application Consultation Number
UK REACH Auth. No.:	UK REACH Authorisation Number
UK REACH AuthAppC. No.	UK REACH Authorisation Application Consultation Number
UK REACH-Reg.No	UK REACH Registration Number
STOT	specific target organ toxicity
SPM	Synthetic Polymer Microparticles
SVHC	substance of very high concern
TCSI	Taiwan. Existing Chemicals Inventory
TH INV	Thailand. Existing Chemicals Inventory from FDA
TSCA	US. Toxic Substances Control Act
UVCB	substance of unknown or variable composition, complex reaction products or biological materials
VN INVL	Vietnam. National Chemical Inventory

Further information

Key literature references and sources for data	:	Supplier information and data from the "Database of registered substances" of the European Chemicals Agency (ECHA) were used to create this safety data sheet.
Methods used for product classification	:	The classification for human health, physical and chemical hazards and environmental hazards were derived from a combination of calculation methods and if available test data.
Hints for trainings	:	The workers have to be trained regularly on the safe handling of the products based on the information provided in the Safety

Data Sheet and the local conditions of the workplace. National regulations for the training of workers in the handling of hazardous materials must be adhered to.

Other information : The information provided in this Safety Data Sheet is correct to our knowledge at the date of its revision. The information given only describes the products with regard to safety arrangements and is not to be considered as a warranty or quality specification and does not constitute a legal relationship.

The information contained in this Safety Data Sheet relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

|| Indicates updated section.

No.	Short title	REACH Auth. No.:/ REACH AuthAppC. No.	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Distribution of substance	NA	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1, 2, 3, 4, 5, 6a, 6b, 6c, 6d, 7	NA	ES005
2	Formulation & (re)packing of substances and mixtures	NA	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 14, 15	2	NA	ES007
3	Use in rubber production and processing	NA	3	NA	NA	1, 2, 3, 4, 5, 6, 7, 8a, 8b, 9, 13, 14, 15, 21	1, 4, 6d	NA	ES029
4	Use in polymer processing	NA	3	NA	NA	1, 2, 3, 4, 5, 6, 8a, 8b, 9, 13, 14, 21	4	NA	ES031
5	Use in polymer processing	NA	22	NA	NA	1, 2, 6, 8a, 8b, 14, 21	8a, 8d	NA	ES069
6	Use in coatings	NA	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 14, 15	4	NA	ES009
7	Use in coatings	NA	21	NA	1, 4, 8, 9a, 9b, 9c, 15, 18, 23, 24, 31, 34	NA	8a, 8d	NA	ES073
8	Use in coatings	NA	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 10, 11, 13, 15, 19	8a, 8d	NA	ES039
9	Use in cleaning agents	NA	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 10, 13	4	NA	ES011
10	Use in cleaning agents	NA	21	NA	3, 4, 8, 9a, 24, 35, 38	NA	8a, 8d	NA	ES338
11	Use in cleaning agents	NA	22	NA	NA	1, 2, 3, 4, 8a, 8b, 10, 11, 13	8a, 8d	NA	ES041
12	Use in binder and release agents	NA	3	NA	NA	1, 2, 3, 4, 6, 7, 8b, 10, 14	4	NA	ES021
13	Use in binder and release agents	NA	22	NA	NA	1, 2, 3, 4, 6, 8b, 10, 11, 14	8a, 8d	NA	ES047
14	Use in agrochemicals	NA	21	NA	12, 27	NA	8a, 8d	NA	ES438
15	Use in agrochemicals	NA	22	NA	NA	1, 2, 4,	8a, 8d	NA	ES049

						8a, 8b, 11, 13			
16	Use in fuel	NA	3	NA	NA	1, 2, 3, 8a, 8b, 16	7	NA	ES023
17	Use in fuel	NA	21	NA	13	NA	9a, 9b	NA	ES440
18	Use in fuel	NA	22	NA	NA	1, 2, 3, 8a, 8b, 16	9a, 9b	NA	ES051
19	Use as lubricants	NA	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18	4, 7	NA	ES015
20	Use as lubricants	NA	21	NA	1, 24, 31	NA	8a, 8d, 9a, 9b	NA	ES427
21	Use as lubricants	NA	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13, 17, 18, 20	8a, 9a, 9b, 8d	NA	ES036
22	Use as Functional Fluids	NA	3	NA	NA	1, 2, 4, 8a, 8b, 9	7	NA	ES025
23	Use as Functional Fluids	NA	21	NA	16, 17	NA	9a, 9b	NA	ES449
24	Use as Functional Fluids	NA	22	NA	NA	1, 2, 3, 8a, 9, 20	9a, 9b	NA	ES053
25	Use in laboratories	NA	3	NA	NA	10, 15	2, 4	NA	ES027
26	Use in laboratories	NA	22	NA	NA	10, 15	8a	NA	ES061
27	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	ES017
28	Use in metal working fluids / rolling oils	NA	22	NA	NA	1, 2, 3, 8a, 8b, 9, 10, 11, 13, 17	8a, 8d	NA	ES045
29	Use in de-icing and anti-icing applications	NA	21	NA	4	NA	8d	NA	ES453
30	Use in de-icing and anti-icing applications	NA	22	NA	NA	1, 2, 8a, 8b, 11	8d	NA	ES055

31	Use as water treatment chemicals	NA	3	NA	NA	1, 2, 3, 4, 8a, 8b, 13	3, 4	NA	ES033
32	Use as water treatment chemicals	NA	21	NA	36, 37	NA	8f	NA	ES459
33	Use as water treatment chemicals	NA	22	NA	NA	1, 3, 4, 8a, 8b, 13	8f	NA	ES071
34	Use in oil and gas field drilling and production operations	NA	3	NA	NA	1, 2, 3, 4, 8a, 8b	4	NA	ES013
35	Use as mining chemicals	NA	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9	4	NA	ES037
36	Use in explosives	NA	22	NA	NA	1, 2, 3, 5, 8a, 8b	8d	NA	ES063
37	Other consumer uses	NA	21	NA	28, 39	NA	8a, 8d	NA	ES457
38	Manufacture of substance	NA	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	1, 4	NA	ES001
39	Use as an intermediate	NA	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	6a	NA	ES003
40	Use as blowing agents	NA	3	NA	NA	1, 2, 3, 8b, 9, 12	4	NA	ES019
41	Use in road and construction applications	NA	22	NA	NA	8a, 8b, 9, 10, 11, 13	8d, 8f	NA	ES059

1. Short title of Exposure Scenario 1: Distribution of substance	
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals
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 ERC2: Formulation of preparations ERC3: Formulation in materials ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC5: Industrial use resulting in inclusion into or onto a matrix ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) ERC6b: Industrial use of reactive processing aids ERC6c: Industrial use of monomers for manufacture of thermoplastics ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC7: Industrial use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	General exposures (open systems)	Clear transfer lines prior to de-coupling.(PROC4)
	Process sampling	Avoid dip sampling.(PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8b)

	Open systems	
	Bulk transfers Closed systems	Clear transfer lines prior to de-coupling.(PROC8b)
	Drum and small package filling	Clear spills immediately. Put lids on containers immediately after use.(PROC9)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance. Apply vessel entry procedures including use of forced supplied air.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures (closed systems)	Worker - inhalative, long-term	0,01ppm	0,000491
PROC1	General exposures (closed systems)	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,0015
PROC2	General exposures (closed systems)	Worker - inhalative, long-term	10ppm	0,05
PROC2	General exposures (closed systems)	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC3	General exposures (closed systems), Process sampling	Worker - inhalative, long-term	25ppm	0,12
PROC3	General exposures (closed systems), Process sampling	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC4	General exposures (open systems)	Worker - inhalative, long-term	20ppm	0,10
PROC4	General exposures (open systems)	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC15	Laboratory activities	Worker - inhalative, long-term	10ppm	0,05
PROC15	Laboratory activities	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC8b	Bulk transfers, Open systems	Worker - inhalative, long-term	50ppm	0,25
PROC8b	Bulk transfers, Open systems	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01

PROC8b	Bulk transfers, Closed systems	Worker - inhalative, long-term	50ppm	0,25
PROC8b	Bulk transfers, Closed systems	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC9	Drum and small package filling	Worker - inhalative, long-term	50ppm	0,25
PROC9	Drum and small package filling	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8a	Equipment cleaning and maintenance	Worker - inhalative, long-term	50ppm	0,25
PROC8a	Equipment cleaning and maintenance	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,02
PROC2	Storage	Worker - inhalative, long-term	10ppm	0,05
PROC2	Storage	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 2: 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	
Sectors of end-use	SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)	
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 tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC2: Formulation of preparations	
2.1 Contributing scenario controlling environmental exposure for: ERC2		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Process sampling	Avoid dip sampling.(PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC8b)
	Drum and small package filling	Put lids on containers immediately after use.(PROC9)
	Equipment cleaning and maintenance	Apply vessel entry procedures including use of forced supplied air. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.

		Avoid dip sampling.(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures (closed systems)	Worker - inhalative, long-term	0,01ppm	0,00
PROC1	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC2	General exposures (closed systems)	Worker - inhalative, long-term	10ppm	0,05
PROC2	General exposures (closed systems)	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC3	General exposures (closed systems)	Worker - inhalative, long-term	25ppm	0,12
PROC3	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC4	General exposures (open systems)	Worker - inhalative, long-term	20ppm	0,10
PROC4	General exposures (open systems)	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC3	Batch processes at elevated temperatures	Worker - inhalative, long-term	100ppm	0,49
PROC3	Batch processes at elevated temperatures	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC3	Process sampling	Worker - inhalative, long-term	25ppm	0,12
PROC3	Process sampling	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC15	Laboratory activities	Worker - inhalative, long-term	10ppm	0,05
PROC15	Laboratory activities	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC8b	Bulk transfers	Worker - inhalative, long-term	50ppm	0,25
PROC8b	Bulk transfers	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC5	Mixing operations (open systems)	Worker - inhalative, long-term	50ppm	0,25
PROC5	Mixing operations (open systems)	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,02
PROC8a	Transfer from/pouring from containers, Manual	Worker - inhalative, long-term	50ppm	0,25

PROC8a	Transfer from/pouring from containers, Manual	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,02
PROC8b	Drum/batch transfers	Worker - inhalative, long-term	50ppm	0,25
PROC8b	Drum/batch transfers	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC14	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Worker - inhalative, long-term	50ppm	0,25
PROC14	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Worker - dermal, long-term - systemic	3,43mg/kg/day	0,00
PROC9	Drum and small package filling	Worker - inhalative, long-term	50ppm	0,25
PROC9	Drum and small package filling	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8a	Equipment cleaning and maintenance	Worker - inhalative, long-term	50ppm	0,25
PROC8a	Equipment cleaning and maintenance	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,02
PROC2	Storage	Worker - inhalative, long-term	10ppm	0,05
PROC2	Storage	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 3: Use in rubber production and processing		
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 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) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC15: Use as laboratory reagent PROC21: Low energy manipulation of substances bound in materials and/ or articles	
Environmental Release Categories	ERC1: Manufacture of substances ERC4: Industrial use of processing aids in processes and products, not becoming part of articles ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers	
2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4, ERC6d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC7, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC15, PROC21		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Material transfers	Handle substance within a closed system.(PROC8b)
	Calendering (including Banburys)	Minimise exposure by extracted full enclosure for the operation or equipment.(PROC6)
	Tyre build up	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC7)
	Vulcanisation	Minimise exposure by extracted full enclosure for

		the operation or equipment.(PROC6)
	Vulcanisation	Provide extract ventilation to material transfer points and other openings.(PROC6)
	Cooling cured articles	Minimise exposure by extracted full enclosure for the operation or equipment.(PROC6)
	Storage	Store substance within a closed system.(PROC1, PROC2)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 4: Use in polymer processing		
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) PROC13: Treatment of articles by dipping and pouring PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC21: Low energy manipulation of substances bound in materials and/ or articles	
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		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC9, PROC13, PROC14, PROC21		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system.(PROC8b)
	Bulk weighing	Handle substance within a closed system.(PROC1)
	Small scale weighing	Handle all packages and containers carefully to minimise spills.(PROC9)
	Additive premixing	Handle all packages and containers carefully to minimise spills.(PROC3, PROC4)
	Bulk transfers	Use dry break couplings for material transfer.(PROC8b, PROC9)
	Equipment maintenance	Clear up spills immediately and dispose of waste safely.(PROC8a)
	Storage	Store substance within a closed system.(PROC1,

	PROC2)

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 5: Use in 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 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 PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation PROC21: Low energy manipulation of substances bound in materials and/ or articles	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC6, PROC8a, PROC8b, PROC14, PROC21		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system.(PROC1, PROC2)
	Material transfers	Use bulk or semi-bulk handling systems.(PROC8b)
	Storage	Store substance within a closed system.(PROC1, PROC2)
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario		
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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.		

For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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 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 tabletting, 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		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1)
	General exposures (closed systems) With sample collection Use in contained systems	Handle substance within a closed system.(PROC2)
	Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing	Handle substance within a closed system.(PROC2)
	Mixing operations General exposures (closed systems)	Handle substance within a closed system.(PROC3)

	Spraying (automatic/robotic)	Carry out in a vented booth provided with laminar airflow.(PROC7)
	Manual Spraying	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC7)
	Material transfers	Clear transfer lines prior to de-coupling.(PROC8a)
	Material transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Dipping, immersion and pouring	Avoid manual contact with wet work pieces.(PROC13)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC14, PROC15: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures (closed systems)	Worker - inhalative, long-term	0,01ppm	0,00
PROC1	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC2	General exposures (closed systems), With sample collection	Worker - inhalative, long-term	10ppm	0,00
PROC2	General exposures (closed systems), With sample collection	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC2	Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing	Worker - inhalative, long-term	50ppm	0,2
PROC2	Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC3	General exposures (closed systems)	Worker - inhalative, long-term	25ppm	0,1
PROC3	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC4	Film formation - air drying	Worker - inhalative, long-term	20ppm	0,1
PROC4	Film formation - air drying	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,00
PROC5	Preparation of material for application, Mixing operations (open systems)	Worker - inhalative, long-term	50ppm	0,2
PROC5	Preparation of material for application, Mixing	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,00

	operations (open systems)			
PROC7	Spraying (automatic/robotic)	Worker - inhalative, long-term	50ppm	0,2
PROC7	Spraying (automatic/robotic)	Worker - dermal, long-term - systemic	42,86mg/kg/day	0,00
PROC7	Manual spraying	Worker - inhalative, long-term	75ppm	0,4
PROC7	Manual spraying	Worker - dermal, long-term - systemic	42,86mg/kg/day	0,00
PROC8a	Material transfers	Worker - inhalative, long-term	75ppm	0,2
PROC8a	Material transfers	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,00
PROC8b	Material transfers	Worker - inhalative, long-term	50ppm	0,2
PROC8b	Material transfers	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,00
PROC10	Roller, spreader, flow application	Worker - inhalative, long-term	50ppm	0,2
PROC10	Roller, spreader, flow application	Worker - dermal, long-term - systemic	27,43mg/kg/day	0,00
PROC13	Dipping, immersion and pouring	Worker - inhalative, long-term	50ppm	0,2
PROC13	Dipping, immersion and pouring	Worker - dermal, long-term - systemic	0,69mg/kg/day	0,00
PROC15	Laboratory activities	Worker - inhalative, long-term	10ppm	0,00
PROC15	Laboratory activities	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC9	Material transfers, Drum/batch transfers, Transfer from/pouring from containers	Worker - inhalative, long-term	50ppm	0,2
PROC9	Material transfers, Drum/batch transfers, Transfer from/pouring from containers	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,00
PROC14	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Worker - inhalative, long-term	50ppm	0,2
PROC14	Production or preparation or articles by tabletting, compression, extrusion or pelletisation	Worker - dermal, long-term - systemic	3,43mg/kg/day	0,00

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

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	PC1: Adhesives, sealants PC4: Anti-Freeze and de-icing products PC8: Biocidal products (e.g. Disinfectants, pest control) PC9a: Coatings and paints, thinners, paint removers PC9b: Fillers, putties, plasters, modelling clay PC9c: Finger paints PC15: Non-metal-surface treatment products PC18: Ink and toners PC23: Leather treatment products PC24: Lubricants, greases, release products PC31: Polishes and wax blends PC34: Textile dyes, finishing and impregnating products; including bleaches and other processing aids	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC1: Glues, hobby use		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.3 Contributing scenario controlling consumer exposure for: PC1: Glues DIY-use (carpet glue, tile glue, wood parquet glue)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	6390 g
Frequency and duration of use	Frequency of use	1 days/year

	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 110 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.4 Contributing scenario controlling consumer exposure for: PC1: Glue from spray		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	85,05 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.5 Contributing scenario controlling consumer exposure for: PC1: Sealants		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	75 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g.		No specific risk management measure identified

behavioural advice, personal protection and hygiene)	Consumer Measures	beyond those operational conditions stated.
2.6 Contributing scenario controlling consumer exposure for: PC4: Washing car window		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.7 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.8 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa

Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 214,4 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.9 Contributing scenario controlling consumer exposure for: PC8: Cleaners, liquids		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.10 Contributing scenario controlling consumer exposure for: PC8: Cleaners, trigger sprays		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 15%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient	

	temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.11 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 27,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	744 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,75 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.12 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can, PC15: Aerosol spray can		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	215 g
Frequency and duration of use	Frequency of use	2 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.13 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover), PC15: Removers (paint-, glue-, wall paper-, sealant remover)		

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	491 g
Frequency and duration of use	Frequency of use	3 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.14 Contributing scenario controlling consumer exposure for: PC9b: Fillers and putty

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	85 g
Frequency and duration of use	Frequency of use	12 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.15 Contributing scenario controlling consumer exposure for: PC9b: Plasters and floor equalizers

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	13800 g
Frequency and duration of use	Frequency of use	12 days/year

	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.16 Contributing scenario controlling consumer exposure for: PC9b: Modelling clay		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	1 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 254,4 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.17 Contributing scenario controlling consumer exposure for: PC9c		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	1,35 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 254,4 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g.		Avoid using at a product concentration greater than

behavioural advice, personal protection and hygiene)	Consumer Measures	15 %
2.18 Contributing scenario controlling consumer exposure for: PC18		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	40 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 71,40 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.19 Contributing scenario controlling consumer exposure for: PC23: Polishes, wax/cream (floor, furniture, shoes)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	29 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	73,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 430 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.20 Contributing scenario controlling consumer exposure for: PC23: Polishes, spray (furniture, shoes)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid

	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	8 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 430 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.21 Contributing scenario controlling consumer exposure for: PC24: Liquids		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.22 Contributing scenario controlling consumer exposure for: PC24: Pastes		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	34 g
Frequency and duration of use	Frequency of use	10 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²

Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.23 Contributing scenario controlling consumer exposure for: PC24: Sprays		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	73 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,75 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.24 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% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	142 g
Frequency and duration of use	Frequency of use	29 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	73,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 430 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.25 Contributing scenario controlling consumer exposure for: PC31: Polishes, spray (furniture, shoes)		

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	8 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 430 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.26 Contributing scenario controlling consumer exposure for: PC34

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	115 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

PC34, PC1: Glues, hobby use, PC1: Glues DIY-use, PC1: Glue from spray, PC1: Sealants, PC4: Washing car window, PC4: Pouring into radiator, PC4: Lock de-icer, PC9a: Solvent rich, high solid, water borne paint, PC9a: Aerosol spray can, PC9a: Removers, PC15: Solventrich, high solid, water borne paint, PC15: Aerosol spray can, PC15: Removers, PC23: Polishes, wax/cream, PC23: Polishes, spray, PC31: Polishes, wax / cream, PC31:

Polishes, spray, PC9b: Fillers and putty, PC9b: Plasters and floor equalizers, PC9b: Modelling clay,, ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC1: Glues, hobby use	---	Consumer inhalation, long term	135mg/m³	0,16
PC1: Glues, hobby use	---	Consumer dermal exposure	1,8mg/kg/day	0,01
PC1: Glues, hobby use	---	Consumer oral, long-term	0mg/kg/day	0,00
PC1: Glues DIY-use	---	Consumer inhalation, long term	225000mg/m³	0,33
PC1: Glues DIY-use	---	Consumer dermal exposure	21,4mg/kg/day	0,00
PC1: Glues DIY-use	---	Consumer oral, long-term	0mg/kg/day	0,00
PC1: Glue from spray	---	Consumer inhalation, long term	3825mg/m³	0,02
PC1: Glue from spray	---	Consumer dermal exposure	1,8mg/kg/day	0,00
PC1: Glue from spray	---	Consumer oral, long-term	0mg/kg/day	0,00
PC1: Sealants	---	Consumer inhalation, long term	5850mg/m³	0,66
PC1: Sealants	---	Consumer dermal exposure	1,8mg/kg/day	0,01
PC1: Sealants	---	Consumer oral, long-term	0mg/kg/day	0,00
PC4: Washing car window	---	Consumer inhalation, long term	0,1mg/m³	0,00
PC4: Washing car window	---	Consumer dermal exposure	0mg/kg/day	0,00
PC4: Washing car window	---	Consumer oral, long-term	0mg/kg/day	0,00
PC4: Pouring into radiator	---	Consumer inhalation, long term	5882,4mg/m³	0,10
PC4: Pouring into radiator	---	Consumer dermal exposure	14,3mg/kg/day	0,11
PC4: Pouring into radiator	---	Consumer oral, long-term	0mg/kg/day	0,00
PC4: Lock de-icer	---	Consumer inhalation, long term	58,8mg/m³	0,01
PC4: Lock de-icer	---	Consumer dermal exposure	17,9mg/kg/day	0,06
PC4: Lock de-icer	---	Consumer oral, long-term	0mg/kg/day	0,00
PC8: Cleaners, liquid	---	Consumer inhalation, long term	1500mg/m³	0,00
PC8: Cleaners, liquid	---	Consumer dermal exposure	85,8mg/kg/day	0,00
PC8: Cleaners, liquid	---	Consumer oral, long-term	0mg/kg/day	0,08
PC8: Cleaners, trigger sprays	---	Consumer inhalation, long term	6250mg/m³	0,09

PC8: Cleaners, trigger sprays	---	Consumer dermal exposure	71,5mg/kg/day	0,22
PC8: Cleaners, trigger sprays	---	Consumer oral, long-term	0mg/kg/day	0,00
PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint	---	Consumer inhalation, long term	93750mg/m³	0,43
PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint	---	Consumer dermal exposure	35,7mg/kg/day	0,00
PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint	---	Consumer oral, long-term	0mg/kg/day	0,00
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	Consumer inhalation, long term	32500mg/m³	0,09
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	Consumer dermal exposure	35,7mg/kg/day	0,00
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	Consumer oral, long-term	0mg/kg/day	0,00
PC9a: Removers, PC15: Removers	---	Consumer inhalation, long term	90000mg/m³	0,06
PC9a: Removers, PC15: Removers	---	Consumer dermal exposure	128,6mg/kg/day	0,00
PC9a: Removers, PC15: Removers	---	Consumer oral, long-term	0mg/kg/day	0,00
PC9b: Fillers and putty	---	Consumer inhalation, long term	50000mg/m³	0,05
PC9b: Fillers and putty	---	Consumer dermal exposure	6mg/kg/day	0,00
PC9b: Fillers and putty	---	Consumer oral, long-term	0mg/kg/day	0,00
PC9b: Plasters and floor equalizers	---	Consumer inhalation, long term	> 999999mg/m³	0,25
PC9b: Plasters	---	Consumer dermal	142,9mg/kg/day	0,00

and floor equalizers		exposure		
PC9b: Plasters and floor equalizers	---	Consumer oral, long-term	0mg/kg/day	0,00
PC9b: Modelling clay	---	Consumer inhalation, long term	0mg/m³	0,00
PC9b: Modelling clay	---	Consumer dermal exposure	25,4mg/kg/day	0,01
PC9b: Modelling clay	---	Consumer oral, long-term	10mg/kg/day	0,77
PC9c: Finger paints	---	Consumer inhalation, long term	0mg/m³	0
PC9c: Finger paints	---	Consumer dermal exposure	127,2mg/kg/day	0,12
PC9c: Finger paints	---	Consumer oral, long-term	68mg/kg/day	0,78
PC18: Refilling of toners	---	Consumer inhalation, long term	200mg/m³	0,57
PC18: Refilling of toners	---	Consumer dermal exposure	1,2mg/kg/day	0,02
PC18: Refilling of toners	---	Consumer oral, long-term	0mg/kg/day	0,00
PC23: Polishes, wax/cream	---	Consumer inhalation, long term	1400mg/m³	0,57
PC23: Polishes, wax/cream	---	Consumer dermal exposure	71,5mg/kg/day	0,11
PC23: Polishes, wax/cream	---	Consumer oral, long-term	0mg/kg/day	0,00
PC23: Polishes, spray	---	Consumer inhalation, long term	1400mg/m³	0,20
PC23: Polishes, spray	---	Consumer dermal exposure	71,5mg/kg/day	0,11
PC23: Polishes, spray	---	Consumer oral, long-term	0mg/kg/day	0,00
PC24: Liquids	---	Consumer inhalation, long term	125000mg/m³	0,04
PC24: Liquids	---	Consumer dermal exposure	71,5mg/kg/day	0,24
PC24: Liquids	---	Consumer oral, long-term	0mg/kg/day	0,00
PC24: Pastes	---	Consumer inhalation, long term	0mg/m³	0,00
PC24: Pastes	---	Consumer dermal exposure	28,6mg/kg/day	0,05
PC24: Pastes	---	Consumer oral, long-term	0mg/kg/day	0,00
PC24: Sprays	---	Consumer inhalation, long term	7500mg/m³	0,14
PC24: Sprays	---	Consumer dermal exposure	35,7mg/kg/day	0,11
PC24: Sprays	---	Consumer oral, long-term	0mg/kg/day	0,00
PC31: Polishes, wax / cream	---	Consumer inhalation, long term	13750mg/m³	0,12
PC31: Polishes,	---	Consumer dermal	71,5mg/kg/day	0,01

wax / cream		exposure		
PC31: Polishes, wax / cream	---	Consumer oral, long-term	0mg/kg/day	0,00
PC31: Polishes, spray	---	Consumer inhalation, long term	3375mg/m³	0,12
PC31: Polishes, spray	---	Consumer dermal exposure	71,5mg/kg/day	0,11
PC31: Polishes, spray	---	Consumer oral, long-term	0mg/kg/day	0,00
PC34	---	Consumer inhalation, long term	575mg/m³	0,40
PC34	---	Consumer dermal exposure	14,3mg/kg/day	0,00
PC34	---	Consumer oral, long-term	0mg/kg/day	0,00

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 8: Use in coatings		
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 PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC15: Use as laboratory reagent PROC19: Hand-mixing with intimate contact and only PPE available	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1)
	Filling/ preparation of equipment from drums or containers.	Handle substance within a closed system.(PROC2)
	General exposures (closed systems) Use in contained systems	Handle substance within a closed system.(PROC2)
	Manual Spraying Indoor	Carry out in a vented booth or extracted enclosure.(PROC11)
	Manual Spraying Outdoor	Ensure operation is undertaken outdoors.(PROC11)
	Dipping, immersion and pouring	Avoid manual contact with wet work pieces. Clear up spills immediately and dispose of waste

	Indoor	safely.(PROC13)
	Dipping, immersion and pouring Outdoor	Avoid manual contact with wet work pieces. Clear up spills immediately and dispose of waste safely.(PROC13)
	Hand application - fingerpaints, pastels, adhesives Indoor	Ensure doors and windows are opened.(PROC19)
Conditions and measures related to personal protection, hygiene and health evaluation	Manual Spraying Outdoor	Wear a respirator conforming to EN140 with Type A filter or better.(PROC11)
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC15, PROC19: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures (closed systems)	Worker - inhalative, long-term	0,01ppm	0,00
PROC1	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC2	General exposures (closed systems)	Worker - inhalative, long-term	20ppm	0,1
PROC2	General exposures (closed systems)	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC3	Preparation of material for application	Worker - inhalative, long-term	25ppm	0,1
PROC3	Preparation of material for application	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC4	Film formation - air drying	Worker - inhalative, long-term	50ppm	0,2
PROC4	Film formation - air drying	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,00
PROC5	Preparation of material for application	Worker - inhalative, long-term	100ppm	0,5
PROC5	Preparation of material for application	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,00
PROC8a	Material transfers	Worker - inhalative, long-term	100ppm	0,5
PROC8a	Material transfers	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,00
PROC8b	Drum/batch transfers	Worker - inhalative, long-term	50ppm	0,2
PROC8b	Drum/batch transfers	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,00
PROC10	Roller, spreader, flow	Worker - inhalative, long-	100ppm	0,5

	application	term		
PROC10	Roller, spreader, flow application	Worker - dermal, long-term - systemic	27,43mg/kg/day	0,00
PROC11	Manual spraying	Worker - inhalative, long-term	150ppm	0,7
PROC11	Manual spraying	Worker - dermal, long-term - systemic	107,14mg/kg/day	0,1
PROC13	Dipping, immersion and pouring	Worker - inhalative, long-term	100ppm	0,5
PROC13	Dipping, immersion and pouring	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,00
PROC15	Laboratory activities	Worker - inhalative, long-term	10ppm	0,00
PROC15	Laboratory activities	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC19	Hand application - fingerpaints, pastels, adhesives	Worker - inhalative, long-term	100ppm	0,5
PROC19	Hand application - fingerpaints, pastels, adhesives	Worker - dermal, long-term - systemic	141,43mg/kg/day	0,2

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 9: 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	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8a)
	Filling/ preparation of equipment from drums or containers.	Clear transfer lines prior to de-coupling.(PROC8b)
	Cleaning with high pressure washers	Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

Exposure Scenario

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 10: Use in cleaning agents		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC3: Air care products PC4: Anti-Freeze and de-icing products PC8: Biocidal products (e.g. Disinfectants, pest control) PC9a: Coatings and paints, thinners, paint removers PC24: Lubricants, greases, release products PC35: Washing and cleaning products PC38: Welding and soldering products (with flux coatings or flux cores.), flux products	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC3: Aircare, instant action (aerosol sprays)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,1 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	4 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.3 Contributing scenario controlling consumer exposure for: PC3: Aircare, continuous action (solid & liquid)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,48 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	480 min

Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,7 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.4 Contributing scenario controlling consumer exposure for: PC4: Washing car window		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.5 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.6 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer		

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 214,4 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.7 Contributing scenario controlling consumer exposure for: PC8: Laundry and dish washing products

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	15 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	30 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.8 Contributing scenario controlling consumer exposure for: PC8: Cleaners, liquids

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	128 days/year

	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.9 Contributing scenario controlling consumer exposure for: PC8: Cleaners, trigger sprays

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.10 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 27,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	744 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,75 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.11 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	215 g
Frequency and duration of use	Frequency of use	2 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.12 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	491 g
Frequency and duration of use	Frequency of use	3 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.13 Contributing scenario controlling consumer exposure for: PC24: Liquids		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 %.
	Physical Form (at time of	liquid

	use)	
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.14 Contributing scenario controlling consumer exposure for: PC24: Pastes		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	34 g
Frequency and duration of use	Frequency of use	10 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.15 Contributing scenario controlling consumer exposure for: PC24: Sprays		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	73 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by	Exposed skin area	Covers skin contact area up to 428,75 cm²

risk management		
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.16 Contributing scenario controlling consumer exposure for: PC35: Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.17 Contributing scenario controlling consumer exposure for: PC35: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	128 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

protection and hygiene)		
2.18 Contributing scenario controlling consumer exposure for: PC38		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	12 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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 ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Cleaning with high pressure washers Spraying Indoor	Provide a good standard of controlled ventilation (10 to 15 air changes per hour)(PROC11)
	Cleaning with high pressure washers Spraying Outdoor	Limit the substance content in the product to 1 %. or Avoid carrying out operation for more than 15 minutes. Ensure operation is undertaken outdoors.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 12: Use in binder and release 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 PROC6: Calendering operations PROC7: Industrial spraying PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC10: Roller application or brushing PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation	
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		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC6, PROC7, PROC8b, PROC10, PROC14		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Material transfers	Clear transfer lines prior to de-coupling.(PROC1, PROC2, PROC3)
	Casting operations Open systems	Provide extraction ventilation at points where emissions occur.(PROC6)
	Spraying Machines	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC7)
	Spraying Manual	Carry out in a vented booth or extracted enclosure.(PROC7)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		
Environment		

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 13: Use in binder and release 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 PROC6: Calendering operations 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 PROC14: Production of preparations or articles by tabletting, compression, extrusion, pelletisation	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC6, PROC8b, PROC10, PROC11, PROC14, PROC1, PROC2, PROC3, PROC4		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Limit the substance content in the product to 25 %.(PROC6)	
Technical conditions and measures to control dispersion from source towards the worker	Material transfers Closed systems	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC1, PROC2, PROC3)
	Casting operations Open systems	Provide extraction ventilation at points where emissions occur.(PROC6)
	Spraying Machines	Minimise exposure by extracted full enclosure for the operation or equipment.(PROC11)
	Spraying Manual	Carry out in a vented booth or extracted enclosure.(PROC11)
	Batch process	Store substance within a closed system.(PROC1, PROC2)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying Machines	Segregate the activity away from other operations.(PROC11)
	Spraying Manual	Segregate the activity away from other operations.(PROC11)
Conditions and measures related to personal protection, hygiene	Spraying Manual	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)

and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 14: Use in agrochemicals		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC12: Fertilizers PC27: Plant protection products	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC12, PC27		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,3 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 857,5 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 15: 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 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 ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC4, PROC8a, PROC8b, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 4 hours/day(PROC11)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Limit the substance content in the product to 25 %.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Spraying/fogging by machine application	Apply within a vented cab supplied with filtered air under positive pressure and with a protection factor of >20.(PROC11)
	Operation of equipment containing engine oils and similar	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Disposal of wastes	Clear up spills immediately and dispose of waste safely.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source
Environment
No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 16: Use in fuel		
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 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 PROC16: Using material as fuel sources, limited exposure to unburned product to be expected	
Environmental Release Categories	ERC7: Industrial use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC7		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC8b)
	Drum/batch transfers	Avoid spillage when withdrawing pump. Use drum pumps or carefully pour from container.(PROC8b)
	General exposures (open systems) Closed systems	Handle substance within a closed system.(PROC1, PROC2)
	Equipment cleaning and maintenance	Apply vessel entry procedures including use of forced supplied air. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance.(PROC8a)
	Vessel and container cleaning	Apply vessel entry procedures including use of forced supplied air. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 17: Use in fuel		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC13: Fuels	
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b		
2.2 Contributing scenario controlling consumer exposure for: PC13: Liquid: automotive refuelling		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	37500 g
Frequency and duration of use	Frequency of use	52 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	3 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 210 cm²
Other given operational conditions affecting consumers exposure	Outdoor use	
	Room size	100 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.3 Contributing scenario controlling consumer exposure for: PC13: Liquid: scooter refuelling		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	52 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 210 cm²
Other given operational conditions affecting consumers exposure	Outdoor use	
	Room size	100 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

protection and hygiene)		
2.4 Contributing scenario controlling consumer exposure for: PC13: Liquid: garden equipment - use		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	750 g
Frequency and duration of use	Frequency of use	26 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	120 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 420 cm²
Other given operational conditions affecting consumers exposure	Outdoor use	
	Room size	100 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.5 Contributing scenario controlling consumer exposure for: PC13: Liquid: garden equipment - refuelling		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	750 g
Frequency and duration of use	Frequency of use	26 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 420 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.6 Contributing scenario controlling consumer exposure for: PC13: Liquid: home space heater fuel		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	750 g
Frequency and duration of use	Frequency of use	26 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 210 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.7 Contributing scenario controlling consumer exposure for: PC13: Liquid: lamp oil		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	100 g
Frequency and duration of use	Frequency of use	52 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	0,6 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 210 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks

are managed to at least equivalent levels.

1. Short title of Exposure Scenario 18: Use in fuel		
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 PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC16: Using material as fuel sources, limited exposure to unburned product to be expected	
Environmental Release Categories	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC8b)
	Drum/batch transfers	Avoid spillage when withdrawing pump.(PROC8b)
	Refuelling aircraft	Avoid spillage when withdrawing pump.(PROC8a)
	General exposures (closed systems)	Handle substance within a closed system.(PROC3)
	General exposures (open systems) Closed systems	Handle substance within a closed system.(PROC16)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Vessel and container cleaning	Apply vessel entry procedures including use of forced supplied air. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 19: 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 ERC7: Industrial use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC8b)
	Operation and lubrication of high energy open equipment	Provide extract ventilation to points where emissions occur. Restrict area of openings to equipment.(PROC17, PROC18)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible. Clear transfer lines prior to de-coupling.(PROC7)
	Maintenance (of larger	Minimise exposure by partial enclosure of the

	plant items) and machine set up	operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC8b)
	Maintenance of small items	Avoid manual contact with wet work pieces. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Remanufacture of reject articles	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC9)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Bulk transfers	Wear suitable gloves tested to EN374.(PROC8b)
	Wear suitable gloves tested to EN374.(PROC8b)	
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 20: Use as lubricants		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC1: Adhesives, sealants PC24: Lubricants, greases, release products PC31: Polishes and wax blends	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC1: Glues, hobby use		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.3 Contributing scenario controlling consumer exposure for: PC1: Glues DIY-use (carpet glue, tile glue, wood parquet glue)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	6390 g
Frequency and duration of use	Frequency of use	1 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 110 cm²
Other given operational conditions affecting consumers	Room size	20 m3

exposure	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.4 Contributing scenario controlling consumer exposure for: PC1: Glue from spray		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	85,05 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.5 Contributing scenario controlling consumer exposure for: PC1: Sealants		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	75 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 35,73 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.6 Contributing scenario controlling consumer exposure for: PC24: Liquids		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.7 Contributing scenario controlling consumer exposure for: PC24: Pastes		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	34 g
Frequency and duration of use	Frequency of use	10 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.8 Contributing scenario controlling consumer exposure for: PC24: Sprays		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	73 g
Frequency and duration of use	Frequency of use	6 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min

Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428,75 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.9 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% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	142 g
Frequency and duration of use	Frequency of use	29 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	73,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 430 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.10 Contributing scenario controlling consumer exposure for: PC31: Polishes, spray (furniture, shoes)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	35 g
Frequency and duration of use	Frequency of use	8 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 430 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

protection and hygiene)	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 21: Use as lubricants	
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 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 PROC18: Greasing at high energy conditions PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems ERC8d: Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC17, PROC18, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	4 hours/day(PROC8a, PROC11, PROC17, PROC18)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Operation and lubrication of high energy open equipment Indoor	Restrict area of openings to equipment. Provide extraction ventilation at points where emissions occur.(PROC17, PROC18)
	Operation and lubrication of high energy open equipment Outdoor	Ensure operation is undertaken outdoors.(PROC17)

	Maintenance (of larger plant items) and machine set up	Provide extract ventilation to emission points when contact with warm (>50oC) product is likely.(PROC8b)
	Maintenance of small items	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.(PROC11)
	Treatment by dipping and pouring	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Allow time for product to drain from workpiece.(PROC13)
	Treatment by dipping and pouring	Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan. Allow time for product to drain from workpiece.(PROC13)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Maintenance of small items	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC8a)
	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Treatment by dipping and pouring	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC13)
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 22: 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 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	
2.1 Contributing scenario controlling environmental exposure for: ERC7		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers Closed systems	Transfer via enclosed lines. Clear transfer lines prior to de-coupling.(PROC1, PROC2)
	Filling/ preparation of equipment from drums or containers.	Carefully pour from containers.(PROC8a)
	Remanufacture of reject articles	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC9)
	Equipment maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 23: Use as Functional 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	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC16, PC17		
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
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2200 g
Frequency and duration of use	Frequency of use	4 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 468 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 24: 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	ERC9a: Wide dispersive indoor use of substances in closed systems ERC9b: Wide dispersive outdoor use of substances in closed systems	
2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Transfer from/pouring from containers	Avoid spillage when withdrawing pump.(PROC9)
	Remanufacture of reject articles	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC9)
	Equipment maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the		

Exposure Scenario

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 25: Use in laboratories		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Process categories	PROC10: Roller application or brushing 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	
2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC4		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC10, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 4 hours/day(PROC15)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Laboratory activities	Automate activity where possible. Restrict area of openings to equipment. Handle substance within a closed system. Clear spills immediately. Remotely vent displaced vapours. Use dedicated equipment.(PROC15)
	Cleaning	Drain down system prior to equipment break-in or maintenance. Retain drain downs in sealed storage pending disposal or for subsequent recycle. Automate activity where possible. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC10)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 26: Use in laboratories		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Process categories	PROC10: Roller application or brushing PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC10, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 4 hours/day(PROC15)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Laboratory activities	Handle substance within a closed system. Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours. Use dedicated equipment. Restrict area of openings to equipment. Allow time for product to drain from workpiece. Automate activity where possible.(PROC15)
	Cleaning	Automate activity where possible. Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC10)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/

Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 27: 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	
2.1 Contributing scenario controlling environmental exposure for: ERC4		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC8b)
	Process sampling	Use dedicated equipment.(PROC8b)
	Metal machining operations	Restrict area of openings to equipment.(PROC17)
	Treatment by dipping and pouring	Allow time for product to drain from workpiece. Automate activity where possible.(PROC13)
	Spraying	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC7)

	Rolling, Brushing Manual	Avoid splashing.(PROC10)
	Semi-automated metal rolling/forming	Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Automate activity where possible.(PROC17)
	Equipment cleaning and maintenance Dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8b)
	Equipment cleaning and maintenance Non-dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 28: 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 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 ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 1 hours/day(PROC8a)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Filling/ preparation of equipment from drums or containers. Dedicated facility	Clear transfer lines prior to de-coupling.(PROC8b)
	Metal machining operations	Provide enhanced general ventilation by mechanical means.(PROC17)
	Spraying	Provide enhanced general ventilation by mechanical means.(PROC11)
	Treatment by dipping and pouring	Allow time for product to drain from workpiece.(PROC13)
	Equipment cleaning and maintenance Non-dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Equipment cleaning and	Clear transfer lines prior to de-coupling.(PROC8b)

	maintenance Dedicated facility	
	Storage	Handle substance within a closed system.(PROC1, PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Spraying	Wear a respirator conforming to EN140 with Type A/P2 filter or better.(PROC11)
	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 29: Use in de-icing and anti-icing applications		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC4: Anti-Freeze and de-icing products	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC4: Washing car window		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.3 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 428 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

2.4 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 40%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 214,4 cm²
Other given operational conditions affecting consumers exposure	Room size	34 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m3) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 30: Use in de-icing and anti-icing applications		
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 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 PROC11: Non industrial spraying	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC8a, PROC8b, PROC11		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
	Frequency of use	< 1 hours/day(PROC11)
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Material transfers	Clear transfer lines prior to de-coupling.(PROC8b)
	Spraying/fogging by machine application	Ensure operation is undertaken outdoors.(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying/fogging by machine application	Stay upwind/ keep distance from source.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source
Environment
No exposure assessment presented for the environment.
Workers
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario
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.

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 31: 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 ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
2.1 Contributing scenario controlling environmental exposure for: ERC3, ERC4		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC2)
	Drum/batch transfers	Avoid spillage when withdrawing pump.(PROC8b)
	General exposures (open systems)	Restrict area of openings to equipment.(PROC4)
	Pouring from small containers	Use drum pumps or carefully pour from container.(PROC13)
	Batch process	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source
Environment
No exposure assessment presented for the environment.

Workers

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 32: Use as water treatment chemicals		
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)	
Chemical product category	PC36: Water softeners PC37: Water treatment chemicals	
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		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling consumer exposure for: PC36		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	10 g
	Amount used per event (oral exposure)	0,000015 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 6600 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.
2.3 Contributing scenario controlling consumer exposure for: PC37		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Amount used	Amount used per event	10 g
	Amount used per event (oral exposure)	0,000154 g
Frequency and duration of use	Frequency of use	365 days/year
	Frequency of use	1 Times per day
Human factors not influenced by risk management	Exposed skin area	Covers skin contact area up to 6600 cm²
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

protection and hygiene)	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

ECETOC TRA consumer v3. Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 33: Use as water treatment chemicals		
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 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	ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix	
2.1 Contributing scenario controlling environmental exposure for: ERC8f		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Drum/batch transfers	Avoid spillage when withdrawing pump. Clear transfer lines prior to de-coupling. Use drum pumps or carefully pour from container.(PROC8b)
	General exposures (open systems)	Restrict area of openings to equipment.(PROC4)
	Pouring from small containers	Carefully pour from containers. Avoid spillage when withdrawing pump.(PROC13)
	Equipment maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 34: Use in oil and gas field drilling and production operations	
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
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
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers from tote tanks and supply vessels	Handle substance within a closed system.(PROC8b)
	Filling/ preparation of equipment from drums or containers.	Handle substance within a closed system.(PROC8b)
	Drilling mud (re-)formulation	Handle substance within a closed system.(PROC3)
	Process sampling	Clear transfer lines prior to de-coupling. Clear spills immediately. Remotely vent displaced vapours.(PROC3)

3. Exposure estimation and reference to its source
Environment
No exposure assessment presented for the environment.
Workers
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 35: Use as mining 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 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)
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
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling.(PROC2)
	Drum/batch transfers	Avoid spillage when withdrawing pump.(PROC8b)
	Pouring from small containers	Handle all packages and containers carefully to minimise spills.(PROC9)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
	Storage	Store substance within a closed system.(PROC1)

3. Exposure estimation and reference to its source
Environment
No exposure assessment presented for the environment.
Workers
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 36: Use in explosives		
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	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems	
2.1 Contributing scenario controlling environmental exposure for: ERC8d		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Handle substance within a closed system. Clear transfer lines prior to de-coupling. Remotely vent displaced vapours.(PROC3)
	Transfer from/pouring from containers Non-dedicated facility	Avoid spillage when withdrawing pump.(PROC8a)
	Storage	Store substance within a closed system.(PROC1, PROC2)
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario		
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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 37: Other consumer uses	
Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC28: Perfumes, fragrances PC39: Cosmetics, personal care products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8d: Wide dispersive outdoor use of processing aids in open systems
Activity	Note: this Exposure Scenario is only relevant for an appropriated use according to the quality grade of the substance delivered

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

2.2 Contributing scenario controlling consumer exposure for: PC28, PC39

Consumer uses e.g. as a carrier in cosmetics/personal care products, perfumes and fragrances. Note: For cosmetic and personal care products, risk assessment only required for the environment under REACH as human health is covered by alternative legislation

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

Predicted exposures are not expected to exceed the applicable exposure limits when the operational conditions/risk management measures given in section 2 are implemented.

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

Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

1. Short title of Exposure Scenario 38: Manufacture of substance		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals	
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 PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC1: Manufacture of substances ERC4: Industrial use of processing aids in processes and products, not becoming part of articles	
2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	General exposures (open systems)	Handle substance within a closed system.(PROC4)
	Bulk transfers Open systems	Handle substance within a closed system.(PROC8b)
	Bulk transfers Closed systems	Ensure material transfers are under containment or extract ventilation. Clear transfer lines prior to de-coupling.(PROC8b)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance. Clear spills immediately.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling. Provide a good standard of general or controlled ventilation (5 to 15 air changes per hour).(PROC2)

Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures (closed systems)	Worker - inhalative, long-term - systemic	0,01ppm	0,00
PROC1	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC2	General exposures (closed systems)	Worker - inhalative, long-term	10ppm	0,05
PROC2	General exposures (closed systems)	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC3	General exposures (closed systems)	Worker - inhalative, long-term	25ppm	0,12
PROC3	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC4	General exposures (open systems)	Worker - inhalative, long-term	20ppm	0,10
PROC4	General exposures (open systems)	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8b	Process sampling	Worker - inhalative, long-term	50ppm	0,25
PROC8b	Process sampling	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC15	Laboratory activities	Worker - inhalative, long-term	10ppm	0,05
PROC15	Laboratory activities	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC8b	Bulk transfers, Open systems	Worker - inhalative, long-term	150ppm	0,74
PROC8b	Bulk transfers, Open systems	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8b	Bulk transfers, Closed systems	Worker - inhalative, long-term	2,5ppm	0,25
PROC8b	Bulk transfers, Closed systems	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8a	Equipment cleaning and maintenance	Worker - inhalative, long-term	50ppm	0,25
PROC8a	Equipment cleaning and maintenance	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,02
PROC2	Storage	Worker - inhalative, long-term	10ppm	0,05
PROC2	Storage	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 39: Use as an intermediate		
Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Sectors of end-use	SU8: Manufacture of bulk, large scale chemicals (including petroleum products) SU9: Manufacture of fine chemicals	
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 PROC15: Use as laboratory reagent	
Environmental Release Categories	ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)	
2.1 Contributing scenario controlling environmental exposure for: ERC6a		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (closed systems)	Handle substance within a closed system.(PROC1, PROC2, PROC3)
	General exposures (open systems)	Handle substance within a closed system.(PROC4)
	Bulk transfers Open systems	Handle substance within a closed system.(PROC8b)
	Bulk transfers Closed systems	Ensure material transfers are under containment or extract ventilation.(PROC8b)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle. Drain down system prior to equipment break-in or maintenance. Clear spills immediately.(PROC8a)
	Storage	Store substance within a closed system. Avoid dip sampling.(PROC2)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection. Avoid direct eye contact with product, also via contamination on hands.	

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: ECETOC TRA worker v3

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	General exposures (closed systems)	Worker - inhalative, long-term	0,01ppm	0,00
PROC1	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC2	General exposures (closed systems)	Worker - inhalative, long-term	10ppm	0,05
PROC2	General exposures (closed systems)	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00
PROC3	General exposures (closed systems)	Worker - inhalative, long-term	25ppm	0,12
PROC3	General exposures (closed systems)	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC4	General exposures (open systems)	Worker - inhalative, long-term	20ppm	0,10
PROC4	General exposures (open systems)	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8b	Process sampling	Worker - inhalative, long-term	50ppm	0,25
PROC8b	Process sampling	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC15	Laboratory activities	Worker - inhalative, long-term	10ppm	0,05
PROC15	Laboratory activities	Worker - dermal, long-term - systemic	0,34mg/kg/day	0,00
PROC8b	Bulk transfers, Open systems	Worker - inhalative, long-term	150ppm	0,74
PROC8b	Bulk transfers, Open systems	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8b	Bulk transfers, Closed systems	Worker - inhalative, long-term	2,5ppm	0,25
PROC8b	Bulk transfers, Closed systems	Worker - dermal, long-term - systemic	6,86mg/kg/day	0,01
PROC8a	Equipment cleaning and maintenance	Worker - inhalative, long-term	50ppm	0,25
PROC8a	Equipment cleaning and maintenance	Worker - dermal, long-term - systemic	13,71mg/kg/day	0,02
PROC2	Storage	Worker - inhalative, long-term	10ppm	0,05
PROC2	Storage	Worker - dermal, long-term - systemic	1,37mg/kg/day	0,00

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

Exposure Scenario

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 40: Use as blowing 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 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) PROC12: Use of blowing agents in manufacture of foam
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
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8b, PROC9, PROC12		
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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Technical conditions and measures to control dispersion from source towards the worker	Bulk transfers	Use vapour recovery units when necessary. Clear transfer lines prior to de-coupling.(PROC8b)
Organisational measures to prevent /limit releases, dispersion and exposure	Extrusion and expansion of polymer mass	Normal safe operations. Regular testing for fugitive emissions.(PROC12)

3. Exposure estimation and reference to its source
Environment
No exposure assessment presented for the environment.
Workers
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario
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. Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. For further information on the assessment method, see: https://www.ecetoc.org/

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Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

1. Short title of Exposure Scenario 41: Use in road and construction applications		
Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Process categories	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	
Environmental Release Categories	ERC8d: Wide dispersive outdoor use of processing aids in open systems ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix	
2.1 Contributing scenario controlling environmental exposure for: ERC8d, ERC8f		
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed		
2.2 Contributing scenario controlling worker exposure for: PROC8a, PROC8b, PROC9, 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
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day
Human factors not influenced by risk management	Assumes use at not more than 20°C above ambient temperature.	
Other operational conditions affecting workers exposure	Operation is carried out at elevated temperature (> 20°C above ambient temperature).(PROC8b)	
Technical conditions and measures to control dispersion from source towards the worker	Drum/batch transfers Dedicated facility	Use dedicated equipment. Clear transfer lines prior to de-coupling.(PROC8b)
	Spraying/fogging by machine application	Automate activity where possible.(PROC11)
	Equipment cleaning and maintenance	Retain drain downs in sealed storage pending disposal or for subsequent recycle.(PROC8a)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying/fogging by machine application	Stay upwind/ keep distance from source.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Drum/batch transfers Dedicated facility	Wear a respirator conforming to EN140 with Type A filter or better.(PROC8b)
	Spraying/fogging by machine application	Wear a respirator conforming to EN140 with Type A filter or better.(PROC11)
3. Exposure estimation and reference to its source		
Environment		
No exposure assessment presented for the environment.		
Workers		
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.		

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

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.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.
For further information on the assessment method, see: https://www.ecetoc.org/
Only properly trained persons shall make use of scaling methods while checking whether the OC and RMM are within the boundaries set by the ES

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.