

**PROPANOL NORMAL**

**Code : 15338**

**SECTION 1. Identification of the substance/mixture and of the company/undertaking**

**1.1. Product identifier**

Chemical description : n-Propyl alcohol , n-Propanol , 1- Propanol , 1- Hydroxy propane .  
 Type of product : Pure product .  
 Reach registration number : 01-2119486761-29

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

- \* Identified use(s) : See table on the front page of the annex.
- \* Use(s) advised against : This product is not recommended for any industrial, professional or consumer use other than identified in table on the front page of the annex.

**1.3. Details of the supplier of the safety data sheet**

- \* Company identification : BRENNTAG N.V. - Nijverheidslaan 38 - BE-8540 DEERLIJK  
 TEL: +32(0)56/77.69.44 - FAX: +32(0)56/77.57.11  
 E-MAIL: info@brenntag.be - Website: www.brenntag.be  
  
 BRENNTAG Nederland B.V. - Donker Duyvisweg 44 - NL-3316 BM DORDRECHT  
 TEL: +31(0)78/65.44.944 - FAX: +31(0)78/65.44.919  
 E-MAIL: info@brenntag.nl - Website: www.brenntag.nl

**1.4. Emergency telephone number**

- \* Emergency phone number : België : Antipoison Center - Brussels  
 TEL: +32(0)70/245.245  
  
 The Netherlands : National Poisoning Information Center - Bilthoven  
 TEL: +31(0)30/274.88.88 (Only for the purpose of informing medical personnel in cases of acute intoxications)

**SECTION 2. Hazards identification**

**2.1. Classification of the substance or mixture**

**Classification according to Directive 67/548/EEC or 1999/45/EC**

Highly flammable (F; R11)  
 Irritant (Xi; R41)  
 Other (-; R67)

**Classification according to Regulation (EC) No 1272/2008**

Flammable liquids - Category 2 - Danger (Flam. Liq. 2; H225)  
 Serious eye damage - Category 1 - Danger (Eye Dam. 1; H318)  
 Specific Target Organ Toxicity - Single exposure - Narcotic effects - Category 3 - Warning (STOT SE 3; H336)

**2.2. Label elements**

**Label in accordance with Regulation (EC) No 1272/2008**

- Dangerous ingredient(s) : n-Propyl alcohol
- Hazard pictogram(s)



- Signal word : Danger
- Hazard statements : H225 - Highly flammable liquid and vapour. H318 - Causes serious eye damage. H336 - May cause drowsiness or dizziness.
- Precautionary statements : P243 - Take precautionary measures against static discharge.

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**SECTION 2. Hazards identification (continued)**

- Response : P303+P361+P353 - IF ON SKIN (or hair) : Remove immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 - IF INHALED : Remove to fresh air and keep at rest in a position comfortable for breathing. P305+P351+P338 - IF IN EYES : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P312 - Call a POISON CENTER or doctor if you feel unwell.
- Storage : P403+P233 - Store in well-ventilated place. Keep container tightly closed.

**2.3. Other hazards**

- Physical/chemical hazards : Attacks metals with liberation of hydrogen gas.
- Hazards for the health : A health dangerous concentration in the air will not or very slowly be reached by evaporation of this substance at app. 20°C; by spraying much faster.
- Hazards for the environment : No significant danger. This product is no substance or contains no PBT or vPvB (in accordance with Annex XIII).
- Hazards for the safety : Vapor mixes readily with air forming explosive mixtures.

**SECTION 3. Composition/information on ingredients**

**3.1. Substances**

Name component(s)	Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
n-Propyl alcohol	: > 99.8 %	71-23-8	200-746-9	603-003-00-0	01-2119486761-29	F; R11 R67 Xi; R41 ----- Flam. Liq. 2; H225 Eye Dam. 1; H318 STOT SE 3; H336

The full text of the R-phrases and (EU)H-statements is in section 16.

**SECTION 4. First aid measures**

**4.1. Description of first aid measures**

- General : In case of doubt or persistent symptoms, call a physician. Never give anything by mouth to an unconscious person.
- First Aid Measures
- Inhalation : Remove victim into fresh air. Allow the affected person to rest. If not breathing, give artificial respiration. Consult a doctor.
- Skin Contact : Remove contaminated clothing. Rinse skin immediately with plenty of water. (shower if necessary). Consult doctor if irritation develops.
- Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water. Remove contact lenses after a few minutes rinse. Consult eye doctor. Do not use a neutralisation agent.
- Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water. Give victim plenty of water to drink. Seek medical advice.

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

See section 11.

**PROPANOL NORMAL****Code : 15338****SECTION 4. First aid measures (continued)****4.3. Indication of any immediate medical attention and special treatment needed**

For specialist advice doctors should contact the NVCI or the Belgian Poison center.

**SECTION 5. Firefighting measures****5.1. Extinguishing media**

Extinguishing Media

- Suitable : Extinguishing powder , Alcohol resistant foam , Carbon dioxide (CO<sub>2</sub>) , Water spray
- Insuitable : Heavy water stream .

**5.2. Special hazards arising from the substance or mixture**

Special Exposure Hazards : Fire may liberate carbon oxides (CO) and smoke.

**5.3. Advice for firefighters**

- Special Protective Equipment for Firefighters : Use self-contained breathing apparatus and wear protective clothes when in close proximity to fire.
- Special Procedures : Apply water spray or fog to cool nearby equipment. Avoid fire-fighting water to enter environment.

**SECTION 6. Accidental release measures****6.1. Personal precautions, protective equipment and emergency procedures**

Personal Precautions : Eliminate every possible source of ignition (open fire, sparks, smoking, ...). Evacuate all personnel immediately and ventilate area. Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)

**6.2. Environmental precautions**

Environmental Precautions : Shut off leaks if without risks. Dike in the spilled product as much as possible with inert material. Prevent entry of product in public water, sewers or soil. Notify authorities if product enters sewers or public waters.

**6.3. Methods and material for containment and cleaning up**

Methods for Cleaning Up : Collect the spillage in closable, suitable disposal containers. Clean up any spills as soon as possible, using an inert absorbent material. Residue is to be washed down with plenty of water.

**6.4. Reference to other sections**

For personal protection, see section 8.  
For the removal of the waste product, see section 13.

**SECTION 7. Handling and storage****7.1. Precautions for safe handling**

Handling : AVOID FOG TRANSFORMATION !  
Avoid breathing vapour and contact with skin, eyes and clothing. Wear recommended personal protective equipment. (See section 8)  
When using, do not eat, drink or smoke.  
Wash hands before and after working with the product.  
Emergency eye wash fountains and showers should be available in the immediate vicinity of any potential exposure.

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**SECTION 7. Handling and storage (continued)**

**7.2. Conditions for safe storage, including any incompatibilities**

- Storage : Keep only in the original, safely locked container in a cool, well ventilated and fireproof place.  
All dangerous products should be placed on a drip tray or should be barreled.  
Keep away from : Oxidizing agents , Strong acids .
- Protection against Fire and Explosion : Remove all sources of ignition (open fire, sparks, smoking, ...).  
Vapours are heavier than air and spread along the ground.  
With a temperature equal to or higher than the flash point, the mixture steam-air may create a highly flammable and explosive mixture.  
Do not use compressed air to either agitate or transfer contents of storage containers (tanks) / shipping drums containing this material.  
Take measures against electrostatic discharges.  
Use explosionproof equipment.  
Use spark-arm implement.
- Packaging Material : Stainless steel .
- Insuitable Packaging Material : Light metals , Some synthetics , Rubber .

**7.3. Specific end use(s)**

For identified uses, see subsection 1.2 and/or exposure scenarios.

**SECTION 8. Exposure controls/personal protection**

**8.1. Control parameters**

- \* Occupational Exposure Limits : n-Propyl alcohol : Limit value (BE) : 100 ppm (250 mg/m<sup>3</sup>) (2011)
- Biological limit values : They will be included when available.
- DNELs : • n-Propyl alcohol : Worker, acute - systemic effects, inhalation : 1723 mg/m<sup>3</sup>  
• n-Propyl alcohol : Worker, long-term - systemic effects, inhalation : 268 mg/m<sup>3</sup>  
• n-Propyl alcohol : Worker, long-term - systemic effects, dermal : 136 mg/kg bw/ day  
• n-Propyl alcohol : Consumer, acute - systemic effects, inhalation : 1036 mg/m<sup>3</sup>  
• n-Propyl alcohol : Consumer, long-term - systemic effects, inhalation : 80 mg/m<sup>3</sup>  
• n-Propyl alcohol : Consumer, long-term - systemic effects, dermal : 81 mg/kg bw/ day  
• n-Propyl alcohol : Consumer, long-term - systemic effects, oral : 61 mg/kg
- PNECs : • n-Propyl alcohol : Fresh water : 10 mg/l  
• n-Propyl alcohol : Marine water : 1 mg/l  
• n-Propyl alcohol : Fresh water sediment : 22,8 mg/kg  
• n-Propyl alcohol : Marine water sediment : 2,28 mg/kg  
• n-Propyl alcohol : Soil : 2,2 mg/kg  
• n-Propyl alcohol : Intermittent release : 10 mg/l  
• n-Propyl alcohol : Sewage treatment plant : 96 mg/l

**8.2. Exposure controls**

- Engineering Measures : Ventilation ( Through the floor ) , Local exhaust .
- Personal Protection Equipment
- Respiratory protection : CE-approved mask for organic vapours and solvents (type A, brown).
- Skin protection : Suitable protective clothing .
- \* - Hand protection : Suitable material for safety gloves (EN 374):  
The suitability for a specific workplace should be discussed with the producers of the protective gloves.  
- material : Butyl rubber  
- thickness : 0,3 mm  
- breakthrough time : >8 h

**PROPANOL NORMAL****Code : 15338****SECTION 8. Exposure controls/personal protection (continued)**

- Eye/Face protection : Closed safety glasses or face shield.  
Environmental exposure controls : See sections 6, 7, 12 and 13.

**SECTION 9. Physical and chemical properties****9.1. Information on basic physical and chemical properties**

- Physical State (20°C) : Liquid .  
Form/Colour : Clear , Colourless .  
Odour : Odour of alcohol .  
Odour threshold : 0,07 - 100 mg/m<sup>3</sup>  
pH value : Not applicable.  
Melting/Freezing point : <-127 °C  
Boiling Point/Range (1013 hPa) : app. 97 °C  
\* Flash point : 24 °C  
Fire hazard : P2  
Evaporation rate : 1,3 ( Butyl acetate = 1)  
Explosion limits in air : 2,1 - 13,5 vol.%  
Vapour pressure (20°C) : 1,99 kPa  
Relative vapour density (air=1) : 2,1  
Relative density of saturated vapour/air mixture (air=1) : 1,02  
Relative density (water=1) : 0,8  
Solubility in water (20°C) : Completely miscible  
Log P Octanol/Water at 25°C : 0,2  
Auto-ignition temperature : app. 400 °C  
Minimum ignition energy : No data available.  
Decomposition temperature : No data available.  
Viscosity (20°C) : 2,3 mPa.s (10% solution ) ( Dynamic )  
\* Explosive properties : No chemical groups associated with explosive properties .  
\* Oxidizing properties : No chemical groups associated with oxidizing properties .

**9.2. Other information**

- Surface tension (20°C) : 0,0708 N/m  
Specific leading : 9,2.10E5 pS/m  
% Volatiles (by weight) : > 99,8  
Saturation concentration : 46 g/cm<sup>3</sup>

**SECTION 10. Stability and reactivity****10.1. Reactivity**

- Reactivity : Reacts violently with oxidizing agents and strong acids.

**10.2. Chemical stability**

- Stability : Stable at normal circumstances  
The substance decomposes by heating in formation of hydrogen gas.

**10.3. Possibility of hazardous reactions**

- Hazardous reactions : Vapour may form explosive mixture with air.  
Contact with metallic substances may release inflammable hydrogen gas.

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**SECTION 10. Stability and reactivity (continued)**

**10.4. Conditions to avoid**

Conditions to avoid : High temperatures .

**10.5. Incompatible materials**

Materials to avoid : Oxidizing agents , Strong acids , Light metals , Some synthetics , Rubber .

**10.6. Hazardous decomposition products**

Hazardous Decomposition Products : Carbon oxides .

**SECTION 11. Toxicological information**

**11.1. Information on toxicological effects**

Acute toxicity

- Inhalation : Exposure to high concentrations may cause lowering of consciousness. May cause irritation of respiratory tract. Symptoms include: Sore throat , Cough , Headache , Sleepiness , Dizziness , Loss of coordination .  
• n-Propyl alcohol : LC50 (Rat, inhalation, 4 h) : >33,8 mg/l
- Skin contact : May be irritating for the skin. Product degrades skin. Product is being absorbed through the skin. Symptoms include: Redness , Pain .  
• n-Propyl alcohol : LD50 (Rabbit, dermal) : >5000 mg/kg
- Ingestion : Abdominal pain , Symptoms include: Drowsiness , See "Inhalation" .  
• n-Propyl alcohol : LD50 (Rat, oral) : >2000 mg/kg
- Skin corrosion/irritation : Rabbit : Not irritant .
- Serious eye damage/irritation : Rabbit : Risk of serious damage to eyes
- Aspiration hazard : Not considered hazardous.
- Respiratory or skin sensitisation : Not sensitive .
- Carcinogenicity : Not listed as carcinogenic .
- Mutagenicity : Not listed as mutagenic .
- Reproductive toxicity : Not listed for reproductive toxicity .
- \* Specific target organ toxicity - single exposure : To human : May cause drowsiness or dizziness.
- \* Specific target organ toxicity - repeated exposure : To human : Listed not for organ toxicity .  
For animals : No effects known.

**SECTION 12. Ecological information**

**12.1. Toxicity**

- \* Ecotoxicity : • n-Propyl alcohol : LC50 (Fish, 96 h) : >1000 mg/l (Leuciscus idus)  
• n-Propyl alcohol : EC50 (Daphnia magna, 48 h) : >3000 mg/l  
• n-Propyl alcohol : NOEC (Daphnia magna, 21 d) : >100 mg/l

**12.2. Persistence and degradability**

Persistence and degradability : • n-Propyl alcohol : Persistence and degradability : Readily biodegradable .

**12.3. Bioaccumulative potential**

Bioaccumulation : • n-Propyl alcohol : Bioaccumulation : Bioaccumulation not expected .

**12.4. Mobility in soil**

**PROPANOL NORMAL****Code : 15338****SECTION 12. Ecological information (continued)**

\* Mobility : • n-Propyl alcohol : Mobility : Very high potential for mobility in soil.

**12.5. Results of PBT and vPvB assessment**

Evaluation : • n-Propyl alcohol : PBT/vPvB : No

**12.6. Other adverse effects**

WGK class (DE) : 1 ( Weak water pollutant ) .

Water damaging (NL) : 11

Decontamination exertion (NL) : B

Photochemical ozone creation potential : No data available.

Ozone depletion potential : No data available.

Endocrine disrupting potential : No data available.

Global warming potential : No data available.

**SECTION 13. Disposal considerations****13.1. Waste treatment methods**

Waste from residues/Unused products : The product has to be destroyed according to national or local legislation, by a company specialised in handling hazardous waste products.

European list of waste products : XXXXXX - European waste product code. This code is assigned on the basis of the most current applications and can not be representative for pollutions which are arisen at the effective use of the product. The producer of the waste has to evaluate its process himself and has to grant the appropriate waste coding. See Decision 2001/118/EC.

Removal contaminated packaging : Packing is to be used exclusively for the packing of this product. After use, empty and close the packing very carefully. In case of returned packing, the empty packing can be offered back to the supplier.

**SECTION 14. Transport information****14.1. UN number**

UN Number : 1274

**14.2. UN proper shipping name**

ADR Name : UN 1274 n-Propanol (Propyl alcohol, normal), 3, III, (D/E)

ADN Name : UN 1274 n-Propanol (Propyl alcohol, normal) , 3, III

\* IMDG Name : UN 1274 n-Propanol (Propyl alcohol, normal), 3, III, (24°C)

**14.3. Transport hazard classe(s)**

Class : 3

**14.4. Packing group**

Packaging Group : III

**14.5. Environmental hazards**

Environmentally hazard : No

Marine pollutant : No

**14.6. Special precautions for user**

Danger number : 30

Hazard Label(s) : 3

EmS-N° : F-E , S-D

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**SECTION 14. Transport information (continued)**
**14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Type ship : 3  
Pollution category : Y

**SECTION 15. Regulatory information**
**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**

Inventories : Australian inventory (AICS): Listed in inventory.  
Canadian inventory (DSL): Listed in inventory.  
Chinese inventory (IECS): Listed in inventory.  
European inventory (EINECS): Listed in inventory.  
Japanese inventory (ENCS): Listed in inventory.  
Korean inventory (KECI): Listed in inventory.  
Philippine inventory (PICCS): Listed in inventory.  
Inventory of the United States (TSCA): Listed in inventory.

NFPA n° : 1-3-0

Relevant EU Rule(s) : Directive 96/82/EC of the Council of 9 December 1996 on the control of major-accident hazards involving dangerous substances  
Directive 98/24/EC of the Council of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work  
Directive 1999/13/EC of the Council of 11 March 1999 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain activities and installations  
Directive 2004/42/CE of the European Parliament and of the Council of 21 April 2004 on the limitation of emissions of volatile organic compounds due to the use of organic solvents in certain paints and varnishes and vehicle refinishing products and amending Directive 1999/13/EC  
Decision 2001/118/EC of the Commission of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes  
Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006  
Regulation (EU) No 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (Reach)

**15.2. Chemical Safety Assessment**

\* A chemical safety assessment has been carried out for the material.

**SECTION 16. Other information**

This safety data sheet has been drawn up in accordance with Regulation (EU) No 453/2010.  
This safety data sheet is exclusively made for industrial/professional use.

\* Has changed compared to previous revision.

\* Changes : Section 1 , Section 8 , Section 9 , Section 11 , Section 12 , Section 14 , Section 15

Sources of used key data : The information contained herein is based on the present state of our knowledge ( Producer(s) , Chemical cards , ...).  
See also on the webaddress:  
<http://apps.echa.europa.eu/registered/registered-sub.aspx#search>



**PROPANOL NORMAL****Code : 15338****SECTION 16. Other information (continued)**

- R-phrases(s) : R11 - Highly flammable.  
R41 - Risk of serious damage to eyes.  
R67 - Vapours may cause drowsiness and dizziness.
- (EU)H-statement(s) : H225 - Highly flammable liquid and vapour.  
H318 - Causes serious eye damage.  
H336 - May cause drowsiness or dizziness.
- \* List of abbreviations and acronyms : ADN (Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation interieur) : European agreement concerning the international carriage of dangerous goods by inland waterways  
ADR (Accord européen relatif au transport international des marchandises Dangereuses par Route) : European agreement concerning the international carriage of dangerous goods by road  
CO : Carbon monoxide  
DNEL (Derived No Effect Level) : an estimated safe exposure level  
EmS (Emergency Schedule) : the first code refers to the relevant fire schedule and the second code refers to the relevant spillage schedule  
IMDG (International Maritime Dangerous Goods code)  
NFPA (National Fire Protection Association) or fire diamant  
NOEC (No Observed Effect Concentration)  
NVC I : National Poisoning Information Center  
PBT : persistent, bioaccumulative and toxic  
PNEC (Predicted No Effect Concentration) : concentration below which exposure to a substance is not expected to cause adverse effects  
REACH : Registration, Evaluation, Authorisation and restriction of Chemicals  
vPvB : very persistent and very bioaccumulative  
WGK (Wassergefährdungsklasse) : a German classification of substances that indicate the environmental hazard for surface water

This information is to our knowledge correct and complete on the date of issue of this safety data sheet. The information only concerns the product and does not give any guarantee for the quality and the completeness of the properties of the product, or in case of mixing or using in any other process. It remains the responsibility of the user to assure himself that the information is suitable and complete concerning the special use he makes of the product.

BRENNTAG denies all responsibility for loss or damage resulting from the use of these data.

**End of document**

**SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006**

**n-Propanol**

Version 3.0

Print Date 28.02.2013

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No.	Short title	Main User Group (SU)	Sector of Use (SU)	Product Category (PC)	Process Category (PROC)	Environmental Release Category (ERC)	Article Category (AC)	Specified
1	Manufacture of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 15	1, 4	NA	ES72
2	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9	6a	NA	ES88
3	Distribution of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1, 2	NA	ES94
4	Formulation & (re)packing of substances and mixtures	3	10	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES92
5	Uses in coatings	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 15	4	NA	ES98
6	Uses in coatings	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15, 19	8a, 8c, 8d, 8f	NA	ES140
7	Uses in coatings	21	NA	1, 4, 9a, 15, 23, 24	NA	8a, 8c, 8d, 8f	NA	ES268
8	Use in Cleaning Agents	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13	4	NA	ES132
9	Use in Cleaning Agents	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13	8a, 8d	NA	ES192
10	Use in Cleaning Agents	21	NA	4, 9a, 24, 35, 38	NA	8a, 8d	NA	ES502
11	Use as lubricants	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17	4, 7	NA	ES134
12	Use as lubricants	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 11, 13, 17	8a, 8d, 9a, 9b	NA	ES194
13	Use as lubricants	21	NA	24, 31	NA	8a, 8d, 9a, 9b	NA	ES516
14	Use in laboratories	3	NA	NA	10, 15	4	NA	ES138
15	Use in laboratories	22	NA	NA	10, 15	8a	NA	ES198
16	Use in metal working fluids / rolling oils	3	NA	NA	1, 2, 3, 5, 7, 8a, 8b, 9, 10, 13, 17	4	NA	ES136

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17	Use in metal working fluids / rolling oils	22	NA	NA	1, 2, 3, 5, 8a, 8b, 10, 11, 13, 17	8a	NA	ES196
18	Other consumer uses	21	NA	28, 39	NA	8a, 8d	NA	ES520

**SAFETY DATA SHEET according to Regulation (EC) No. 1907/2006**

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**1. Short title of Exposure Scenario 1: 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: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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 % (unless stated differently).
	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 activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	General exposures (open systems) Batch process with sample collection	Handle substance within a predominantly closed system provided with extract ventilation.(PROC4)
	Transfer from/pouring from containers Non-dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)

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	Transfer from/pouring from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC8b)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection. (Efficiency: 80 %)(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
	Laboratory activities small scale	Use suitable eye protection.(PROC15)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m <sup>3</sup>	0,0001
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,0025
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,0934
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,0101

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PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,0025
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,1869
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,0504
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,0467
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,0202
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,0140
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,0504
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,0934
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,0025

**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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 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.

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**1. Short title of Exposure Scenario 2: 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: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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	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, PROC9**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Transfer from/pouring from containers Non-dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Transfer from/pouring	Provide extraction ventilation at points where

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	from containers Dedicated facility	emissions occur. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC8b)
	Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection. (Efficiency: 80 %)(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
	Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long	25,0420mg/m <sup>3</sup>	0,09344



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		term - systemic		
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,05042
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,01402
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042

**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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 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.

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**1. Short title of Exposure Scenario 3: 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: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises 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

**2.1 Contributing scenario controlling environmental exposure for: ERC1, 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, PROC8a, PROC8b, PROC9, PROC15**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion	Transfer from/pouring from containers	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)

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from source towards the worker	Non-dedicated facility	
	Transfer from/pouring from containers Dedicated facility	Provide extract ventilation to points where emissions occur. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC8b)
	Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection.(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
	Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
	Laboratory activities small scale	Use suitable eye protection.(PROC15)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long	0,0250mg/m <sup>3</sup>	0,00009

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		term - systemic		
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,05042
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,01402
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252

**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.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For scaling see: <http://www.ecetoc.org/tra>

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

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**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

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**1. Short title of Exposure Scenario 4: 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	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC15: Use as laboratory reagent</p>
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, PROC15**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC5, PROC8b, PROC9)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	

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Technical conditions and measures to control dispersion from source towards the worker	Batch process Mixing operations (open systems)	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC5)
	Transfer from/pouring from containers Non-dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. Fill containers/cans at dedicated filling points supplied with local extract ventilation.(PROC8b)
	Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
	Batch process Mixing operations (open systems)	Wear suitable gloves (tested to EN374) and eye protection. (Efficiency: 80 %)(PROC5)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection. (Efficiency: 80 %)(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
	Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
	Laboratory activities small scale	Use suitable eye protection.(PROC15)

**3. Exposure estimation and reference to its source**

**Environment**  
No exposure assessment presented for the environment.

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**Workers**

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,05042
PROC5	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC5	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,01402
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252

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



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**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.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.ecetoc.org/tra>  
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.

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**1. Short title of Exposure Scenario 5: Uses in coatings**

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC7: Industrial spraying</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10: Roller application or brushing</p> <p>PROC13: Treatment of articles by dipping and pouring</p> <p>PROC15: Use as laboratory reagent</p>
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, PROC15**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	

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Technical conditions and measures to control dispersion from source towards the worker	Batch process Mixing operations (open systems)	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC5)
	Spraying	Ensure that a spraying booth is used.(PROC7)
	Transfer from/pouring from containers Non-dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)
	Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
	Rolling, Brushing	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC13)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
	Batch process Mixing operations (open systems)	Wear suitable gloves (tested to EN374) and eye protection.(PROC5)
	Spraying	Use suitable eye protection.(PROC7)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection.(PROC8a)
	Transfer from/pouring	Use suitable eye protection.(PROC8b)
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from containers Dedicated facility	
Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)
Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
Laboratory activities small scale	Use suitable eye protection.(PROC15)

**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, PROC10, PROC13, PROC15 Use of ECETOC TRA Version 2 with modifications.

PROC7 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,340mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,05042
PROC5	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC5	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017

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PROC7	---	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC7	---	Worker - dermal, long-term - systemic	---	---
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,01402
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC10	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC10	---	Worker - dermal, long-term - systemic	5,4930mg/kg bw/day	0,04034
PROC13	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC13	---	Worker - dermal, long-term - systemic	2,740mg/kg bw/day	0,02017
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252

PROC7 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant.

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

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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
 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

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**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

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**1. Short title of Exposure Scenario 6: Uses in coatings**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10: Roller application or brushing</p> <p>PROC11: Non industrial spraying</p> <p>PROC13: Treatment of articles by dipping and pouring</p> <p>PROC15: Use as laboratory reagent</p> <p>PROC19: Hand-mixing with intimate contact and only PPE available</p>
Environmental Release Categories	<p>ERC8a: Wide dispersive indoor use of processing aids in open systems</p> <p>ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix</p> <p>ERC8d: Wide dispersive outdoor use of processing aids in open systems</p> <p>ERC8f: Wide dispersive outdoor use resulting in inclusion into or onto a matrix</p>

**2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8c, 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: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC11, PROC13, PROC15, PROC19**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day(PROC1, PROC2, PROC3, PROC4, PROC10, PROC13, PROC15)
	Frequency of use	4 hours/day(PROC5, PROC8a, PROC8b, PROC9, PROC19)
	Frequency of use	< 1 hours/day(PROC11)

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Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3, PROC15)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Spraying	Provide enhanced general ventilation by mechanical means. Provide extract ventilation to points where emissions occur. Use long handled tools where possible.(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process	Use suitable eye protection.(PROC1)
	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Wear suitable gloves (tested to EN374) and eye protection.(PROC4)
	Batch process Mixing operations (open systems)	Wear suitable gloves (tested to EN374) and eye protection.(PROC5)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection. Wear a respirator conforming to EN140 with Type A filter or better.(PROC8a)
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Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)
Spraying	Wear suitable gloves (tested to EN374) and eye protection. Wear a respirator conforming to EN140 with Type A filter or better.(PROC11)
Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
Laboratory activities small scale	Use suitable eye protection.(PROC15)
Manual	Wear suitable gloves (tested to EN374) and eye protection.(PROC19)

**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, PROC10, PROC11, PROC13, PROC15, PROC19

Use of ECETOC TRA Version 2 with modifications.

PROC11 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,343mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252

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PROC4	---	worker inhalation, long term - systemic	125,2080mg/m <sup>3</sup>	0,46719
PROC4	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC5	---	worker inhalation, long term - systemic	150,2502mg/m <sup>3</sup>	0,56064
PROC5	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8a	---	worker inhalation, long term - systemic	15,0250mg/m <sup>3</sup>	0,05606
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	75,1248mg/m <sup>3</sup>	0,28032
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	150,2502mg/m <sup>3</sup>	0,56064
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC10	---	worker inhalation, long term - systemic	25,042mg/m <sup>3</sup>	0,09344
PROC10	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC11	8 hours/day	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC11	---	Worker - dermal, long-term - systemic	---	---
PROC11	< 3 hours/day	worker inhalation, long term - systemic	124,3300mg/m <sup>3</sup>	0,46392
PROC11	< 3 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	5,924mg/kg bw/day	0,04356
PROC11	< 6 hours/day	worker inhalation, long term - systemic	168,7400mg/m <sup>3</sup>	0,62963
PROC11	< 6 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	11,872mg/kg bw/day	0,08729
PROC11	8 hours/day, Outdoor use.	worker inhalation, long term - systemic	185,09mg/m <sup>3</sup>	0,6906
PROC11	8 hours/day, Outdoor use., Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	15,753mg/kg bw/day	0,1158

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PROC13	---	worker inhalation, long term - systemic	25,042mg/m <sup>3</sup>	0,93437
PROC13	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC19	---	worker inhalation, long term - systemic	150,2502mg/m <sup>3</sup>	0,56064
PROC19	---	Worker - dermal, long-term - systemic	28,2860mg/kg bw/day	0,20799

PROC11 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant. RISKOFDERM v2.1 was used for dermal exposure

**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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
 For scaling see: <http://www.tno.nl> and search for "riskofderm".  
 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.

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**1. Short title of Exposure Scenario 7: Uses 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 PC9a: Coatings and paints, thinners, paint removers PC15: Non-metal-surface treatment products PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products
Environmental Release Categories	ERC8a: Wide dispersive indoor use of processing aids in open systems ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix 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: ERC8a, ERC8c, ERC8d, 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: PC1: Glues, hobby use**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**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	Covers concentrations up to 1,4%
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	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	6390 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	360 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 110 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.4 Contributing scenario controlling consumer exposure for: PC1: Glues DIY-use (carpet glue, tile glue, wood parquet glue)**

Tier 2: ConsExpo estimates

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 1,5%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	9000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	75 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 110 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	58 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.5 Contributing scenario controlling consumer exposure for: PC1: Glue from spray**

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	9000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.6 Contributing scenario controlling consumer exposure for: PC1: Sealants**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 12%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	390 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 35,73 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.7 Contributing scenario controlling consumer exposure for: PC4: Washing car window**

Product characteristics	Concentration of the	Covers concentrations up to 1%
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	Substance in Mixture/Article	
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
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	In case of contact with eyes, rinse immediately with plenty of water
<b>2.8 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator</b>		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Ensure good ventilation when using indoors e.g. open windows.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	In case of contact with eyes, rinse immediately with plenty of water
<b>2.9 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer</b>		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	liquid
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	use)	
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 214,4 cm <sup>2</sup>
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	In case of contact with eyes, rinse immediately with plenty of water
<b>2.10 Contributing scenario controlling consumer exposure for: PC9a: Waterborne latex wall paint, PC15: Waterborne latex wall paint</b>		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation., Covers use at ambient temperatures., Ensure good ventilation when using indoors e.g. open windows.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	In case of contact with eyes, rinse immediately with plenty of water
<b>2.11 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint</b>		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 5%
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	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	1300 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water
<b>2.12 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can, PC15: Aerosol spray can</b>		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 25 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	1500 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 1500 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water
<b>2.13 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover), PC15: Removers (paint-, glue-, wall paper-, sealant remover)</b>		
Product characteristics	Concentration of the Substance in	Covers concentrations up to 4%
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	Mixture/Article	
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	30 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.14 Contributing scenario controlling consumer exposure for: PC23: Polishes, wax/cream (floor, furniture, shoes)**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	58 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.15 Contributing scenario controlling consumer exposure for: PC23: Polishes, spray (furniture, shoes)**

Product characteristics	Concentration of the	Covers concentrations up to 50%
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	Substance in Mixture/Article			
	Physical Form (at time of use)	liquid		
	Vapour pressure	28,2 hPa		
Amount used	Amount used per event	9000 g		
Frequency and duration of use	Frequency of use	1 Times per day		
	Exposure duration per event	240 min		
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>		
Other given operational conditions affecting consumers exposure	Room size	58 m <sup>3</sup>		
	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	In case of contact with eyes, rinse immediately with plenty of water		
<b>2.16 Contributing scenario controlling consumer exposure for: PC24</b>				
Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%		
Human factors not influenced by risk management	Exposure is considered negligible			
<b>3. Exposure estimation and reference to its source</b>				
<b>Environment</b>				
No exposure assessment presented for the environment.				
<b>Consumers</b>				
PC1-2, PC1-3, PC1-4, PC9a-1, PC9a-2, PC9a-3, PC9a-4, PC15-1, PC15-2, PC15-3, PC15-4, PC23-1, PC23-2 ConsExpo 4.1				
PC1-1, PC1-2, PC4-1, PC4-2, PC4-3 ESIG GES Consumer Tool				
<b>Contributing Scenario</b>	<b>Specific conditions</b>	<b>Exposure routes</b>	<b>Level of Exposure</b>	<b>RCR</b>
PC1: Glues, hobby use	---	consumer inhalation, acute - systemic	51,15mg/m <sup>3</sup>	0,0490
PC1: Glues, hobby use	---	consumer dermal, long term - systemic	1,43mg/kg bw/day	0,0180
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PC1: Glues, hobby use	---	consumer inhalation, long term - systemic	8,52mg/m <sup>3</sup>	0,1070
PC1: Glues DIY-use	See section 2.3	consumer inhalation, acute - systemic	298,20mg/m <sup>3</sup>	0,2880
PC1: Glues DIY-use	See section 2.3	consumer inhalation, long term - systemic	74,55mg/m <sup>3</sup>	0,932
PC1: Glues DIY-use	See section 2.3	consumer dermal, long term - systemic	0,21mg/kg bw/day	0,003
PC1: Glues DIY-use	See section 2.4	consumer inhalation, acute - systemic	723mg/m <sup>3</sup>	0,7
PC1: Glues DIY-use	See section 2.4	consumer inhalation, long term - systemic	37,7mg/m <sup>3</sup>	0,471
PC1: Glues DIY-use	See section 2.4	consumer dermal, long term - systemic	0,03mg/kg bw/day	0
PC1: Glue from spray	---	consumer inhalation, acute - systemic	0,52mg/m <sup>3</sup>	0,0010
PC1: Glue from spray	---	consumer oral, long term - systemic	1,23mg/kg bw/day	0,02
PC1: Glue from spray	---	consumer dermal, long term - systemic	1,31mg/kg bw/day	0,016
PC1: Glue from spray	---	consumer inhalation, long term - systemic	0,09mg/m <sup>3</sup>	0,001
PC1: Sealants	---	consumer inhalation, acute - systemic	436mg/m <sup>3</sup>	0,45
PC1: Sealants	---	consumer dermal, long term - systemic	1,46mg/kg bw/day	0,018
PC1: Sealants	---	consumer inhalation, long term - systemic	77,10mg/m <sup>3</sup>	0,964
PC4: Washing car window	---	consumer inhalation, acute - systemic	0,15mg/m <sup>3</sup>	---
PC4: Washing car window	---	consumer dermal, long term - systemic	0,00mg/kg bw/day	---
PC4: Washing car window	---	consumer inhalation, long term - systemic	0,00mg/m <sup>3</sup>	---
PC4: Pouring into radiator	---	consumer inhalation, acute - systemic	259,61mg/m <sup>3</sup>	0,2510
PC4: Pouring into radiator	---	consumer dermal, long term - systemic	5,71mg/kg bw/day	0,07
PC4: Pouring into radiator	---	consumer inhalation, long term - systemic	1,84mg/m <sup>3</sup>	0,023
PC4: Lock de-icer	---	consumer inhalation, acute - systemic	49,05mg/m <sup>3</sup>	0,0470
PC4: Lock de-	---	consumer dermal, long	14,29mg/kg bw/day	0,176

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icer		term - systemic		
PC4: Lock de-icer	---	consumer inhalation, long term - systemic	0,51mg/m <sup>3</sup>	0,006
PC9a: Waterborne latex wall paint, PC15: Waterborne latex wall paint	---	consumer inhalation, acute - systemic	704mg/m <sup>3</sup>	0,6800
PC9a: Waterborne latex wall paint, PC15: Waterborne latex wall paint	---	consumer dermal, long term - systemic	1,11mg/kg bw/day	0,014
PC9a: Waterborne latex wall paint, PC15: Waterborne latex wall paint	---	consumer inhalation, long term - systemic	64,5mg/m <sup>3</sup>	0,81
PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint	---	consumer inhalation, acute - systemic	601,00mg/m <sup>3</sup>	0,5800
PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint	---	consumer dermal, long term - systemic	2,77mg/kg bw/day	0,034
PC9a: Solvent rich, high solid, water borne paint, PC15: Solvent rich, high solid, water borne paint	---	consumer inhalation, long term - systemic	55,10mg/m <sup>3</sup>	0,689
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer inhalation, acute - systemic	93,70mg/m <sup>3</sup>	0,0900
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer oral, long term - systemic	0,651mg/kg bw/day	0,011

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PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer dermal, long term - systemic	5,77mg/kg bw/day	0,071
PC9a: Aerosol spray can, PC15: Aerosol spray can	---	consumer inhalation, long term - systemic	1,30mg/m <sup>3</sup>	0,016
PC9a: Removers, PC15: Removers	---	consumer inhalation, acute - systemic	291,00mg/m <sup>3</sup>	0,2810
PC9a: Removers, PC15: Removers	---	consumer dermal, long term - systemic	4,43mg/kg bw/day	0,055
PC9a: Removers, PC15: Removers	---	consumer inhalation, long term - systemic	48,50mg/m <sup>3</sup>	0,606
PC23: Polishes, wax/cream	---	consumer inhalation, acute - systemic	193,00mg/m <sup>3</sup>	0,1860
PC23: Polishes, wax/cream	---	consumer dermal, long term - systemic	42,30mg/kg bw/day	0,522
PC23: Polishes, wax/cream	---	consumer inhalation, long term - systemic	32,10mg/m <sup>3</sup>	0,401
PC23: Polishes, spray	---	consumer inhalation, acute - systemic	2,26mg/m <sup>3</sup>	0,0020
PC23: Polishes, spray	---	consumer oral, long term - systemic	0,51mg/kg bw/day	0,008
PC23: Polishes, spray	---	consumer dermal, long term - systemic	2,31mg/kg bw/day	0,051
PC23: Polishes, spray	---	consumer inhalation, long term - systemic	0,377mg/m <sup>3</sup>	0,008

**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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.esig.org/en/regulatory-information/reach/ges-library/consumer-gess>  
 For scaling see: <http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>  
 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

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**1. Short title of Exposure Scenario 8: Use in Cleaning Agents**

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC7: Industrial spraying</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10: Roller application or brushing</p> <p>PROC13: Treatment of articles by dipping and pouring</p>
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, PROC9, PROC10, PROC13**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Spraying	Ensure that a spraying booth is used.(PROC7)
	Transfer from/pouring from containers	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)

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	Non-dedicated facility	
	Transfer from/pouring from containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)
	Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
	Rolling, Brushing	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC13)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
	Spraying	Use suitable eye protection.(PROC7)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection.(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
	Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
	Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)
	Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
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**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC13 Use of ECETOC TRA Version 2 with modifications.  
PROC7 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,05042
PROC7	---	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC7	---	Worker - dermal, long-term - systemic	---	---
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,743mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,01402
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-	6,8570mg/kg	0,05042

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		term - systemic	bw/day	
PROC10	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC10	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC13	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC13	---	Worker - dermal, long-term - systemic	2,743mg/kg bw/day	0,02017

PROC7 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant.

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

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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
 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.

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**1. Short title of Exposure Scenario 9: Use in Cleaning Agents**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10: Roller application or brushing</p> <p>PROC11: Non industrial spraying</p> <p>PROC13: Treatment of articles by dipping and pouring</p>
Environmental Release Categories	<p>ERC8a: Wide dispersive indoor use of processing aids in open systems</p> <p>ERC8d: Wide dispersive outdoor use of processing aids in open systems</p>

**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, PROC9, PROC10, PROC11, PROC13**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day(PROC1, PROC2, PROC3, PROC4, PROC10, PROC13)
	Frequency of use	4 hours/day(PROC8a, PROC8b, PROC9)
	Frequency of use	1 hours/day(PROC11)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	

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<p>Technical conditions and measures to control dispersion from source towards the worker</p>	<p>Spraying</p>	<p>Ensure that a spraying booth is used. Provide enhanced general ventilation by mechanical means. Provide extract ventilation to points where emissions occur. Use long handled tools where possible.(PROC11)</p>
<p>Organisational measures to prevent /limit releases, dispersion and exposure</p>	<p>Spraying</p>	<p>Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead.(PROC11)</p>
<p>Conditions and measures related to personal protection, hygiene and health evaluation</p>	<p>General exposures (closed systems) Continuous process</p>	<p>Use suitable eye protection.(PROC1)</p>
	<p>General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance</p>	<p>Use suitable eye protection.(PROC2)</p>
	<p>General exposures (closed systems) Batch process with sample collection</p>	<p>Use suitable eye protection.(PROC3)</p>
	<p>General exposures (open systems) Batch process with sample collection</p>	<p>Wear suitable gloves (tested to EN374) and eye protection.(PROC4)</p>
	<p>Transfer from/pouring from containers Non-dedicated facility</p>	<p>Wear suitable gloves (tested to EN374) and eye protection. Wear a respirator conforming to EN140 with Type A filter or better.(PROC8a)</p>
	<p>Transfer from/pouring from containers Dedicated facility</p>	<p>Use suitable eye protection.(PROC8b)</p>
	<p>Pouring from small containers Dedicated facility</p>	<p>Use suitable eye protection.(PROC9)</p>
	<p>Rolling, Brushing</p>	<p>Wear suitable gloves (tested to EN374) and eye protection.(PROC10)</p>
	<p>Spraying</p>	<p>Wear suitable gloves (tested to EN374) and eye protection. Wear a respirator conforming to EN140 with Type A filter or better.(PROC11)</p>

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Dipping, immersion and pouring

Wear suitable gloves (tested to EN374) and eye protection.(PROC13)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC13 Use of ECETOC TRA Version 2 with modifications.  
PROC11 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	125,2080mg/m <sup>3</sup>	0,46719
PROC4	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC8a	---	worker inhalation, long term - systemic	15,0250mg/m <sup>3</sup>	0,05606
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	75,1248mg/m <sup>3</sup>	0,28032
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	150,2502mg/m <sup>3</sup>	0,56064
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC10	---	worker inhalation, long	250,4170mg/m <sup>3</sup>	0,93439

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		term - systemic		
PROC10	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC11	8 hours/day	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC11	---	Worker - dermal, long-term - systemic	---	---
PROC11	< 3 hours/day	worker inhalation, long term - systemic	124,33mg/m <sup>3</sup>	0,4639
PROC11	< 3 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	5,924mg/kg bw/day	0,0436
PROC11	< 6 hours/day	worker inhalation, long term - systemic	168,74mg/m <sup>3</sup>	0,6296
PROC11	< 6 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	11,872mg/kg bw/day	0,0873
PROC11	8 hours/day, Outdoor use.	worker inhalation, long term - systemic	185,09mg/m <sup>3</sup>	0,6906
PROC11	8 hours/day, Outdoor use., Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	15,753mg/kg bw/day	0,1158
PROC13	---	worker inhalation, long term - systemic	250,4120mg/m <sup>3</sup>	0,93437
PROC13	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017

PROC11 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant. RISKOFDERM v2.1 was used for dermal exposure

**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. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
 For scaling see: <http://www.tno.nl> and search for "riskofderm".  
 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

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**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Assumes a good basic standard of occupational hygiene is implemented.

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**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	PC4: Anti-freeze and de-icing products PC9a: Coatings and paints, thinners, paint removers PC24: Lubricants, greases, release products PC35: Washing and cleaning products (including solvent based 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: PC4: Washing car window**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 1%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	1,2 min
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	In case of contact with eyes, rinse immediately with plenty of water

**2.3 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa



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Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m <sup>3</sup> ) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	In case of contact with eyes, rinse immediately with plenty of water

**2.4 Contributing scenario controlling consumer exposure for: PC4: Lock de-icer**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	15 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 214,4 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
	Covers use under typical household ventilation., Covers use at ambient temperatures., Covers use in a one car garage (34 m <sup>3</sup> ) under typical ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	In case of contact with eyes, rinse immediately with plenty of water

**2.5 Contributing scenario controlling consumer exposure for: PC9a: Waterborne latex wall paint**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	3750 g

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Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.6 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 5%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	1300 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	132 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428,75 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.7 Contributing scenario controlling consumer exposure for: PC9a: Aerosol spray can**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 25 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	1500 g

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Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 1500 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	34 m <sup>3</sup>
		Covers use under typical household ventilation., Covers use at ambient temperatures., Ensure good ventilation when using indoors e.g. open windows.
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	In case of contact with eyes, rinse immediately with plenty of water

**2.8 Contributing scenario controlling consumer exposure for: PC9a: Removers (paint-, glue-, wall paper-, sealant-remover)**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 4%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	30 m <sup>3</sup>
		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	In case of contact with eyes, rinse immediately with plenty of water

**2.9 Contributing scenario controlling consumer exposure for: PC24**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%

**2.10 Contributing scenario controlling consumer exposure for: PC35: Laundry and dish washing products**

Product characteristics	Concentration of the Substance in	Covers concentrations up to 5%
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	Mixture/Article	
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	15 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	30 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.11 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	28,2 hPa
Amount used	Amount used per event	27 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	19,8 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 857,5 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.12 Contributing scenario controlling consumer exposure for: PC35: Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)**

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	12 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	10,2 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 428 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**2.13 Contributing scenario controlling consumer exposure for: PC38**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	12 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	60 min
Other given operational conditions affecting consumers exposure	Room size	20 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**3. Exposure estimation and reference to its source**

**Environment**

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No exposure assessment presented for the environment.

**Consumers**

PC9a-1, PC9a-2, PC9a-3, PC9a-4 ConsExpo 4.1

PC38, PC4-1, PC4-2, PC4-3, PC35-1, PC35-2, PC35-3 ESIG GES Consumer Tool

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC4: Washing car window	---	consumer inhalation, acute - systemic	0,145mg/m <sup>3</sup>	---
PC4: Washing car window	---	consumer inhalation, long term - systemic	0,0001mg/m <sup>3</sup>	---
PC4: Pouring into radiator	---	consumer inhalation, acute - systemic	259,61mg/m <sup>3</sup>	0,2510
PC4: Pouring into radiator	---	consumer dermal, long term - systemic	5,707mg/kg bw/day	0,07
PC4: Pouring into radiator	---	consumer inhalation, long term - systemic	1,839mg/m <sup>3</sup>	0,023
PC4: Lock de-icer	---	consumer inhalation, acute - systemic	49,053mg/m <sup>3</sup>	0,0470
PC4: Lock de-icer	---	consumer dermal, long term - systemic	14,293mg/kg bw/day	0,176
PC4: Lock de-icer	---	consumer inhalation, long term - systemic	0,511mg/m <sup>3</sup>	0,006
PC9a: Waterborne latex wall paint	---	consumer inhalation, acute - systemic	704mg/m <sup>3</sup>	0,68
PC9a: Waterborne latex wall paint	---	consumer dermal, long term - systemic	1,110mg/kg bw/day	0,014
PC9a: Waterborne latex wall paint	---	consumer inhalation, long term - systemic	64,50mg/m <sup>3</sup>	0,81
PC9a: Solvent rich, high solid, water borne paint	---	consumer inhalation, acute - systemic	601,00mg/m <sup>3</sup>	0,5800
PC9a: Solvent rich, high solid, water borne paint	---	consumer dermal, long term - systemic	2,77mg/kg bw/day	0,034
PC9a: Solvent rich, high solid, water borne paint	---	consumer inhalation, long term - systemic	55,10mg/m <sup>3</sup>	0,689
PC9a: Aerosol spray can	---	consumer inhalation, acute - systemic	93,70mg/m <sup>3</sup>	0,0900

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PC9a: Aerosol spray can	---	consumer oral, long term - systemic	0,651mg/kg bw/day	0,011
PC9a: Aerosol spray can	---	consumer dermal, long term - systemic	5,770mg/kg bw/day	0,071
PC9a: Aerosol spray can	---	consumer inhalation, long term - systemic	1,300mg/m <sup>3</sup>	0,016
PC9a: Removers	---	consumer inhalation, acute - systemic	291,00mg/m <sup>3</sup>	0,2810
PC9a: Removers	---	consumer dermal, long term - systemic	4,430mg/kg bw/day	0,055
PC9a: Removers	---	consumer inhalation, long term - systemic	48,50mg/m <sup>3</sup>	0,606
PC35: Laundry and dish washing products	---	consumer inhalation, acute - systemic	32,398mg/m <sup>3</sup>	0,0310
PC35: Laundry and dish washing products	---	consumer dermal, long term - systemic	0,057mg/kg bw/day	0,001
PC35: Laundry and dish washing products	---	consumer inhalation, long term - systemic	0,675mg/m <sup>3</sup>	0,008
PC35: Cleaners, liquids	---	consumer inhalation, acute - systemic	612,376mg/m <sup>3</sup>	0,5910
PC35: Cleaners, liquids	---	consumer dermal, long term - systemic	20,008mg/kg bw/day	0,247
PC35: Cleaners, liquids	---	consumer inhalation, long term - systemic	8,420mg/m <sup>3</sup>	0,037
PC35: Cleaners, trigger sprays	---	consumer inhalation, acute - systemic	332,742mg/m <sup>3</sup>	0,3210
PC35: Cleaners, trigger sprays	---	consumer oral, long term - systemic	0,00mg/kg bw/day	0,00
PC35: Cleaners, trigger sprays	---	consumer dermal, long term - systemic	3,995mg/kg bw/day	0,049
PC35: Cleaners, trigger sprays	---	consumer inhalation, long term - systemic	2,357mg/m <sup>3</sup>	0,01
PC38	---	consumer inhalation, acute - systemic	90,238mg/m <sup>3</sup>	0,087
PC38	---	consumer dermal, long term - systemic	0,0000mg/kg bw/day	0,0000
PC38	---	consumer inhalation, long term - systemic	3,760mg/m <sup>3</sup>	0,047

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

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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.  
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
For scaling see: <http://www.esig.org/en/regulatory-information/reach/ges-library/consumer-gess>  
For scaling see: <http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>  
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



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**1. Short title of Exposure Scenario 11: Use as lubricants**

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC7: Industrial spraying</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10: Roller application or brushing</p> <p>PROC13: Treatment of articles by dipping and pouring</p> <p>PROC17: Lubrication at high energy conditions and in partly open process</p>
Environmental Release Categories	<p>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles</p> <p>ERC7: Industrial use of substances in closed systems</p>

**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, PROC9, PROC10, PROC13, PROC17**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10, PROC17)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion	Spraying	Ensure that a spraying booth is used.(PROC7)

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from source towards the worker

Transfer from/pouring from containers Non-dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)
Transfer from/pouring from containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)
Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
Rolling, Brushing	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC10)
Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC13)

Organisational measures to prevent /limit releases, dispersion and exposure

Spraying	Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
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Conditions and measures related to personal protection, hygiene and health evaluation

General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
General exposures (open systems) Batch process with sample collection	Use suitable eye protection.(PROC4)
Spraying	Use suitable eye protection.(PROC7)
Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection.(PROC8a)
Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)

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Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
Operation and lubrication of high energy open equipment	Wear suitable gloves (tested to EN374) and eye protection.(PROC17)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17 Use of ECETOC TRA Version 2 with modifications.  
PROC7 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,343mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC4	---	Worker - dermal, long-term - systemic	6,857mg/kg bw/day	0,05042
PROC7	---	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC7	---	Worker - dermal, long-term - systemic	---	---
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	3,7562mg/m <sup>3</sup>	0,01402

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PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC10	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC10	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC13	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC13	---	Worker - dermal, long-term - systemic	2,743mg/kg bw/day	0,02017
PROC17	---	worker inhalation, long term - systemic	125,2080mg/m <sup>3</sup>	0,46719
PROC17	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	worker inhalation, long term - systemic	250,417mg/m <sup>3</sup>	0,93439
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034

PROC7 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant.

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

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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
 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.

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**1. Short title of Exposure Scenario 12: Use as lubricants**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC11: Non industrial spraying</p> <p>PROC13: Treatment of articles by dipping and pouring</p> <p>PROC17: Lubrication at high energy conditions and in partly open process</p>
Environmental Release Categories	<p>ERC8a: Wide dispersive indoor use of processing aids in open systems</p> <p>ERC8d: Wide dispersive outdoor use of processing aids in open systems</p> <p>ERC9a: Wide dispersive indoor use of substances in closed systems</p> <p>ERC9b: Wide dispersive outdoor use of substances in closed systems</p>

**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, PROC11, PROC13, PROC17**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day(PROC1, PROC2, PROC3, PROC4, PROC13)
	Frequency of use	4 hours/day(PROC8a, PROC8b, PROC9)
	Frequency of use	1 hours/day(PROC11, PROC17)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC4, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC17)
	Assumes activities are at ambient temperature.	

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Other operational conditions affecting workers exposure

Indoor use.

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

Spraying

Ensure that a spraying booth is used. Provide enhanced general ventilation by mechanical means. Provide extract ventilation to points where emissions occur. Use long handled tools where possible.(PROC11)

Operation and lubrication of high energy open equipment

Provide extract ventilation to points where emissions occur.(PROC17)

Organisational measures to prevent /limit releases, dispersion and exposure

Spraying

Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead.(PROC11)

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

General exposures (closed systems) Continuous process

Use suitable eye protection.(PROC1)

General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance

Use suitable eye protection.(PROC2)

General exposures (closed systems) Batch process with sample collection

Use suitable eye protection.(PROC3)

General exposures (open systems) Batch process with sample collection

Wear suitable gloves (tested to EN374) and eye protection.(PROC4)

Transfer from/pouring from containers Non-dedicated facility

Wear suitable gloves (tested to EN374) and eye protection. Wear suitable respiratory protection(PROC8a)

Transfer from/pouring from containers Dedicated facility

Use suitable eye protection.(PROC8b)

Pouring from small containers Dedicated facility

Use suitable eye protection.(PROC9)

Spraying

Wear suitable gloves (tested to EN374) and eye

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	protection. Wear suitable respiratory protection(PROC11)
Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
Operation and lubrication of high energy open equipment	Wear suitable gloves (tested to EN374) and eye protection.(PROC17)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC11, PROC13, PROC17 Use of ECETOC TRA Version 2 with modifications.  
PROC11 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC4	---	worker inhalation, long term - systemic	125,2080mg/m <sup>3</sup>	0,46719
PROC4	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC8a	---	worker inhalation, long term - systemic	15,0250mg/m <sup>3</sup>	0,05606
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	75,1248mg/m <sup>3</sup>	0,28032
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042

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PROC9	---	worker inhalation, long term - systemic	150,2502mg/m <sup>3</sup>	0,56064
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC11	8 hours/day	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC11	8 hours/day	Worker - dermal, long-term - systemic	---	---
PROC11	< 3 hours/day	worker inhalation, long term - systemic	124,33mg/m <sup>3</sup>	0,46392
PROC11	< 3 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	5,924mg/kg bw/day	0,04356
PROC11	< 6 hours/day	worker inhalation, long term - systemic	168,74mg/m <sup>3</sup>	0,62963
PROC11	< 6 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	11,872mg/kg bw/day	0,08729
PROC11	8 hours/day, Outdoor use.	worker inhalation, long term - systemic	185,09mg/m <sup>3</sup>	0,6906
PROC11	8 hours/day, Outdoor use., Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	15,753mg/kg bw/day	0,1158
PROC13	---	worker inhalation, long term - systemic	250,4120mg/m <sup>3</sup>	0,93439
PROC13	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC17	---	worker inhalation, long term - systemic	50,0833mg/m <sup>3</sup>	0,18688
PROC17	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	worker inhalation, long term - systemic	125,2083mg/m <sup>3</sup>	0,4672
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	Worker - dermal, long-term - systemic	27,429mg/kg bw/day	0,20168

PROC11 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant. RISKOFDERM v2.1 was used for dermal exposure

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



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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.

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

For scaling see: <http://www.ecetoc.org/tra>

For scaling see: <https://www.stoffenmanager.nl/default.aspx>

For scaling see: <http://www.tno.nl> and search for "risikofderm".

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.

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

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	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: PC24**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
Human factors not influenced by risk management	Exposure is considered negligible	

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	550 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	58 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

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**2.4 Contributing scenario controlling consumer exposure for: PC31: Polishes, spray (furniture, shoes)**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	28,2 hPa
Amount used	Amount used per event	550 g
Frequency and duration of use	Frequency of use	1 Times per day
	Exposure duration per event	240 min
Human factors not influenced by risk management	Exposed skin areas	Covers skin contact area up to 430 cm <sup>2</sup>
Other given operational conditions affecting consumers exposure	Room size	58 m <sup>3</sup>
	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	In case of contact with eyes, rinse immediately with plenty of water

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Consumers**

ConsExpo 4.1

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC31: Polishes, wax / cream	---	consumer inhalation, acute - systemic	313,00mg/m <sup>3</sup>	0,3020
PC31: Polishes, wax / cream	---	consumer oral, long term - systemic	---	---
PC31: Polishes, wax / cream	---	consumer dermal, long term - systemic	16900mg/kg bw/day	0,209
PC31: Polishes, wax / cream	---	consumer inhalation, long term - systemic	52,100mg/m <sup>3</sup>	0,651
PC31: Polishes, spray	---	consumer inhalation, acute - systemic	2,260mg/m <sup>3</sup>	0,0020

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PC31: Polishes, spray	---	consumer oral, long term - systemic	0,513mg/kg bw/day	0,008
PC31: Polishes, spray	---	consumer dermal, long term - systemic	2,310mg/kg bw/day	0,051
PC31: Polishes, spray	---	consumer inhalation, long term - systemic	0,377mg/m <sup>3</sup>	0,008

**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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.rivm.nl/en/healthanddisease/productsafety/ConsExpo.jsp>  
 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

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**1. Short title of Exposure Scenario 14: 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	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: PROC10, PROC15**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	Exposed skin areas	Palm of one hand (240cm <sup>2</sup> ) (PROC15)
	Exposed skin areas	Palms of both hands (480 cm <sup>2</sup> ) (PROC10)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Rolling, Brushing	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC10)
Conditions and measures related to personal protection, hygiene and health evaluation	Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)
	Laboratory activities small scale	Use suitable eye protection.(PROC15)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

Use of ECETOC TRA Version 2 with modifications.

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC10	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC10	---	Worker - dermal, long-term - systemic	5,4862mg/kg bw/day	0,04034
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252

**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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 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.

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**1. Short title of Exposure Scenario 15: 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 % (unless stated differently).
	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	Exposed skin areas	Palm of one hand (240cm <sup>2</sup> ) (PROC10, PROC15)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Conditions and measures related to personal protection, hygiene and health evaluation	Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)
	Laboratory activities small scale	Use suitable eye protection.(PROC15)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

Use of ECETOC TRA Version 2 with modifications.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC10	---	worker inhalation, long term - systemic	250,4170mg/m <sup>3</sup>	0,93439
PROC10	---	Worker - dermal, long-	5,4862mg/kg	0,04034

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		term - systemic	bw/day	
PROC15	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC15	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252

**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. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. For scaling see: <http://www.ecetoc.org/tra> 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.



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**1. Short title of Exposure Scenario 16: 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	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC7: Industrial spraying</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p>PROC10: Roller application or brushing</p> <p>PROC13: Treatment of articles by dipping and pouring</p> <p>PROC17: Lubrication at high energy conditions and in partly open process</p>
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, 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 % (unless stated differently).
	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	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC5, PROC8b, PROC9, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10, PROC17)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and measures to control dispersion from source towards the worker	Batch process	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC5)
	Mixing operations (open	

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	systems)	
	Spraying	Ensure that a spraying booth is used.(PROC7)
	Transfer from/pouring from containers Non-dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)
	Pouring from small containers Dedicated facility	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC9)
	Rolling, Brushing	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC10)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC13)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	Batch process Mixing operations (open systems)	Wear suitable gloves (tested to EN374) and eye protection.(PROC5)
	Spraying	Use suitable eye protection.(PROC7)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection.(PROC8a)
	Transfer from/pouring from containers Dedicated facility	Use suitable eye protection.(PROC8b)
	Pouring from small containers Dedicated facility	Use suitable eye protection.(PROC9)
	Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye
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	protection.(PROC10)
Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
Operation and lubrication of high energy open equipment	Wear suitable gloves (tested to EN374) and eye protection.(PROC17)

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17 Use of ECETOC TRA Version 2 with modifications.

PROC7 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	25,0420mg/m <sup>3</sup>	0,09344
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC5	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC5	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC7	---	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000
PROC7	---	Worker - dermal, long-term - systemic	---	---
PROC8a	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long	3,7562mg/m <sup>3</sup>	0,01402

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		term - systemic		
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC9	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC9	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC10	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC10	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC13	---	worker inhalation, long term - systemic	12,5208mg/m <sup>3</sup>	0,04672
PROC13	---	Worker - dermal, long-term - systemic	2,743mg/kg bw/day	0,02017
PROC17	---	worker inhalation, long term - systemic	125,2080mg/m <sup>3</sup>	0,46719
PROC17	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	worker inhalation, long term - systemic	250,417mg/m <sup>3</sup>	0,93439
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034

PROC7 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant.

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

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.  
 Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.  
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 For scaling see: <http://www.ecetoc.org/tra>  
 For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
 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.

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**1. Short title of Exposure Scenario 17: Use in metal working fluids / rolling oils**

Main User Groups	SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process categories	<p>PROC1: Use in closed process, no likelihood of exposure</p> <p>PROC2: Use in closed, continuous process with occasional controlled exposure</p> <p>PROC3: Use in closed batch process (synthesis or formulation)</p> <p>PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</p> <p>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</p> <p>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</p> <p>PROC10: Roller application or brushing</p> <p>PROC11: Non industrial spraying</p> <p>PROC13: Treatment of articles by dipping and pouring</p> <p>PROC17: Lubrication at high energy conditions and in partly open process</p>
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: PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC11, PROC13, PROC17**

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	0,5 - 10 kPa
Frequency and duration of use	Frequency of use	8 hours/day(PROC1, PROC2, PROC3, PROC10, PROC13)
	Frequency of use	4 hours/day(PROC5, PROC8a, PROC8b)
	Frequency of use	1 hours/day(PROC11, PROC17)
Human factors not influenced by risk management	Exposed skin areas	Palm of one Hand 240 cm <sup>2</sup> (PROC1, PROC3)
	Exposed skin areas	Palms of both hands 480 cm <sup>2</sup> (PROC2, PROC5, PROC8b, PROC13)
	Exposed skin areas	Two hands 960 cm <sup>2</sup> (PROC8a, PROC10, PROC17)
	Assumes activities are at ambient temperature.	
Other operational conditions affecting workers exposure	Indoor use.	
Technical conditions and	Spraying	Ensure that a spraying booth is used.

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measures to control dispersion from source towards the worker		Provide enhanced general ventilation by mechanical means. Provide extract ventilation to points where emissions occur. Use long handled tools where possible.(PROC11)
	Dipping, immersion and pouring	Provide extract ventilation to points where emissions occur.(PROC13)
	Operation and lubrication of high energy open equipment	Provide extract ventilation to points where emissions occur.(PROC17)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Ensure that the task is not carried out overhead.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	General exposures (closed systems) Continuous process	Use suitable eye protection.(PROC1)
	General exposures (closed systems) Continuous process with sample collection Equipment cleaning and maintenance	Use suitable eye protection.(PROC2)
	General exposures (closed systems) Batch process with sample collection	Use suitable eye protection.(PROC3)
	Batch process Mixing operations (open systems)	Wear suitable gloves (tested to EN374) and eye protection.(PROC5)
	Transfer from/pouring from containers Non-dedicated facility	Wear suitable gloves (tested to EN374) and eye protection.(PROC8a)
	Rolling, Brushing	Wear suitable gloves (tested to EN374) and eye protection.(PROC10)
	Spraying	Wear suitable gloves (tested to EN374) and eye protection. Wear suitable respiratory protection(PROC11)
	Dipping, immersion and pouring	Wear suitable gloves (tested to EN374) and eye protection.(PROC13)
Operation and lubrication of high energy open	Wear suitable gloves (tested to EN374) and eye protection.(PROC17)	

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equipment

**3. Exposure estimation and reference to its source**

**Environment**

No exposure assessment presented for the environment.

**Workers**

PROC1, PROC2, PROC3, PROC5, PROC8a, PROC8b, PROC10, PROC13, PROC17 Use of ECETOC TRA Version 2 with modifications.  
PROC11 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,0250mg/m <sup>3</sup>	0,00009
PROC1	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC2	---	worker inhalation, long term - systemic	50,0830mg/m <sup>3</sup>	0,18688
PROC2	---	Worker - dermal, long-term - systemic	1,3710mg/kg bw/day	0,01008
PROC3	---	worker inhalation, long term - systemic	62,6040mg/m <sup>3</sup>	0,2336
PROC3	---	Worker - dermal, long-term - systemic	0,3430mg/kg bw/day	0,00252
PROC5	---	worker inhalation, long term - systemic	150,2502mg/m <sup>3</sup>	0,56064
PROC5	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8a	---	worker inhalation, long term - systemic	15,0250mg/m <sup>3</sup>	0,05606
PROC8a	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC8b	---	worker inhalation, long term - systemic	75,1248mg/m <sup>3</sup>	0,28032
PROC8b	---	Worker - dermal, long-term - systemic	6,8570mg/kg bw/day	0,05042
PROC10	---	worker inhalation, long term - systemic	250,4170mg/m <sup>3</sup>	0,93439
PROC10	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC11	8 hours/day	worker inhalation, long term - systemic	0,0000mg/m <sup>3</sup>	0,0000

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PROC11	8 hours/day	Worker - dermal, long-term - systemic	---	---
PROC11	< 3 hours/day	worker inhalation, long term - systemic	124,33mg/m <sup>3</sup>	0,4639
PROC11	< 3 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	5,924mg/kg bw/day	0,0436
PROC11	< 6 hours/day	worker inhalation, long term - systemic	168,74mg/m <sup>3</sup>	0,6296
PROC11	< 6 hours/day, Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	11,8720mg/kg bw/day	0,0873
PROC11	8 hours/day, Outdoor use.	worker inhalation, long term - systemic	185,09mg/m <sup>3</sup>	0,6906
PROC11	8 hours/day, Outdoor use., Use of gloves has been considered additionally.	Worker - dermal, long-term - systemic	15,753mg/kg bw/day	0,1158
PROC13	---	worker inhalation, long term - systemic	250,4120mg/m <sup>3</sup>	0,93439
PROC13	---	Worker - dermal, long-term - systemic	2,7430mg/kg bw/day	0,02017
PROC17	---	worker inhalation, long term - systemic	50,0833mg/m <sup>3</sup>	0,18688
PROC17	---	Worker - dermal, long-term - systemic	5,486mg/kg bw/day	0,04034
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	worker inhalation, long term - systemic	125,2083mg/m <sup>3</sup>	0,46720
PROC17	Vapour pressure > 100 hPa, Process temperature = 64 °C	Worker - dermal, long-term - systemic	27,429mg/kg bw/day	0,20168

PROC11 The calculated exposure value is negligibly low. The exposure estimate represents the 75th percentile of the exposure distribution. The short-term exposure is covered by the assessment of long-term exposure. Dermal exposure is not considered to be relevant. RISKOFDERM v2.1 was used for dermal exposure

**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. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. For scaling see: <http://www.ecetoc.org/tra>



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For scaling see: <https://www.stoffenmanager.nl/default.aspx>  
For scaling see: <http://www.tno.nl> and search for "risikoderm".  
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.

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**1. Short title of Exposure Scenario 18: 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

**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**

In accordance to the Article 14 (5b) of the Reach Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC, In accordance to the Article 15 (2) of the Reach Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in biocidal products within the scope of Directive 98/8/EC

**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.

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ISO 14001	Yes	Yes
ISO 22000	Yes	Yes
FSSC 22000	Yes	Yes
GMP+ -feed	Yes	Yes
OHSAS18001	-	Yes
ESAD	Yes	Yes
other	-	AEO