

BUTANOL NORMAL

Code : 11133

Responsible for distribution:

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

In case of emergency:

Belgium:
Antipoison Center - Brussels :
TEL: 070/245.245

The Netherlands:
National Poisoning Information Center - Bilthoven :
TEL: 030/274.88.88

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

1.1. Product identifier

- * Chemical description : n-Butanol , n- Butyl alcohol , 1- Butanol .
- Type of product : Pure product .
- * Reach registration number : 01-2119484630-38

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 : See heading of Material Safety Data Sheet.

1.4. Emergency telephone number

Emergency phone number : See heading of Material Safety Data Sheet.

2. Hazards identification

2.1. Classification of the substance or mixture

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

Flammable (-; R10)
Harmful (Xn; R22)
Irritant (Xi; R37/38-41)
Other (-; R67)

Classification according to Regulation (EC) No 1272/2008

- * Flammable liquids - Category 3 - Warning (Flam. Liq. 3; H226)
- Acute toxicity, oral - Category 4 - Warning (Acute Tox. 4, oral; H302)
- Skin irritation - Category 2 - Warning (Skin Irrit. 2; H315)
- Serious eye damage - Category 1 - Danger (Eye Dam. 1; H318)
- Specific Target Organ Toxicity - Single exposure - Respiratory tract irritation - Category 3 - Warning (STOT SE 3; H335)
- 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-Butanol
- * • Hazard pictogram(s)



- * • Signal word : Danger

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2. Hazards identification (continued)

- * • Hazard statements : H226 - Flammable liquid and vapour. H302 - Harmful if swallowed. H315 - Causes skin irritation. H318 - Causes serious eye damage. H335 - May cause respiratory irritation. H336 - May cause drowsiness or dizziness.
- * • Precautionary statements
- * - Prevention : P210 - Keep away from heat, sparks, open flames or hot surfaces. – No smoking. P243 - Take precautionary measures against static discharge. P280 - Wear protective gloves, protective clothing, eye protection, face protection.
- * - Response : P302+P352 - IF ON SKIN : Wash with plenty of soap and water. 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. P310 - Immediately call a POISON CENTER or doctor.

2.3. Other hazards

- * Physical/chemical hazards : Reacts with aluminium above 100°C forming hydrogen gas.
- * Hazards for the health : A health dangerous concentration in the air will very quickly be reached by evaporation of this substance at app. 20°C; even faster by spraying.
- * 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 : With a temperature equal to or higher than flashpoint, the mixture steam-air can create an inflammable and explosive mixture.

3. Composition/information on ingredients

3.1. Substances

Name component(s)	Weight %	CAS nr	EINECS nr	Index nr	Reach nr	CLASSIFICATION
* n-Butanol	: > 98.5 %	71-36-3	200-751-6	603-004-00-6	01-2119484630-38	R10 Xn; R22 R67 Xi; R37/38-41 ----- Flam. Liq. 3; H226 Acute Tox. 4 (oral); H302 Skin Irrit. 2; H315 Eye Dam. 1; H318 STOT SE 3; H335 STOT SE 3; H336

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

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 mild soap and plenty of water. (shower if necessary).
Consult doctor if irritation develops.

BUTANOL NORMAL**Code : 11133****4. First aid measures (continued)**

- Eye Contact : Rinse immediately thoroughly and long (at least 15 min.) with plenty of water.
Remove contact lenses.
Consult eye doctor.
- Ingestion : DO NOT INDUCE VOMITING. Rinse mouth with water.
Seek medical attention immediately or take to hospital.

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

- * See section 11.

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.

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

Extinguishing Media

- * - Suitable : Extinguishing powder , Alcohol resistant foam , Carbon dioxide (CO₂) , 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.

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.

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7. Handling and storage

7.1. Precautions for safe handling

- * Handling : STRONG HYGIENE ! 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.

7.2. Conditions for safe storage, including any incompatibilities

- * Storage : Keep only in the original, safely locked container in a dry, 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 , Alkali- and earthalkali-metals .
- * Protection against Fire and Explosion : Remove all sources of ignition (open fire, sparks, smoking, ...).
With a temperature equal to or higher than the flash point, the mixture steam-air may create a highly flammable and explosive mixture.
Vapours are heavier than air and spread along the ground.
Take measures against electrostatic discharges.
Use explosionproof equipment.
- * Packaging Material : Stainless steel , Soft steel , Polypropylene , Polyethylene .
- * Insuitable Packaging Material : Aluminium , Copper (+ Alloys) , Several synthetics , Rubber , Coating .

7.3. Specific end use(s)

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

8. Exposure controls/personal protection

8.1. Control parameters

- * Occupational Exposure Limits : n-Butanol : Limit value (BE) : 20 ppm (62 mg/m³) (2011) (D)
(D) The mention "D" means that the absorption of the agent by skin, mucous membranes or eyes constitutes an important part of the total exposition. This absorption can be the consequence of direct contact as well as his presence in the air.
- * Biological limit values : They will be included when available.
- * DNELs : • n-Butanol : Worker, long-term - local effects, inhalation : 310 mg/m³
• n-Butanol : Consumer, long-term - local effects, inhalation : 55 mg/m³
• n-Butanol : Consumer, long-term - systemic effects, oral : 3,125 mg/kg bw/ day
- * PNECs : • n-Butanol : Fresh water : 0,082 mg/l
• n-Butanol : Marine water : 0,0082 mg/l
• n-Butanol : Fresh water sediment : 0,178 mg/kg
• n-Butanol : Marine water sediment : 0,0178 mg/kg
• n-Butanol : Soil : 0,015 mg/kg
• n-Butanol : Intermittent release : 2,25 mg/l
• n-Butanol : Sewage treatment plant : 2476 mg/l

8.2. Exposure controls

- * Engineering Measures : Ventilation , 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):
Nitril rubber : penetration time > 480' - thickness 0,55 mm
Butyl rubber : penetration time > 480' - thickness 0,3 mm

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- Eye/Face protection : Safety glasses or face shield.
- * Environmental exposure controls : See sections 6, 7, 12 en 13.

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 : 0,123 mg/m³
- * pH value : Neutral.
- Melting/Freezing point : -90 °C
- Boiling Point/Range (1013 hPa) : 118 °C
- Flash point (CC) : 35 °C
- Fire hazard : P2
- Evaporation rate : 33 (Ether = 1)
- Explosion limits in air : 1,4 - 11,3 vol. %
- Vapour pressure (20°C) : 0,6 kPa
- Relative vapour density (air=1) : 2,6
- Relative density of saturated vapour/air mixture (air=1) : 1,01
- Density (20°C) : 0,81 kg/l
- Solubility in water (20°C) : 7,8 g/100ml
- Soluble in : Ethanol , Ether , Acetone .
- Log P Octanol/Water (20°C) : 0,8 - 0,9
- * Auto-ignition temperature : 355 °C
- * Minimum ignition energy : No data available.
- * Decomposition temperature : No data available.
- * Viscosity (20°C) : 2,95 mPa.s (Dynamic)
3,6 mm²/s (Kinematic)
- * 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) : 25 mN/m
- Specific leading : 9,1 E5 pS/m
- * % Volatiles (by weight) : > 98,5
- Saturation concentration : 20 g/m³
- Others : Hygroscopic .

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

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

10.2. Chemical stability

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10. Stability and reactivity (continued)

Stability : Stable at normal circumstances .

10.3. Possibility of hazardous reactions

- * Hazardous reactions : Reacts with aluminium above 100°C forming hydrogen gas.
Alkali- and earthalkali-metals : Creation of Hydrogen gas => May cause fire and explosion!

10.4. Conditions to avoid

Conditions to avoid : High temperatures .

10.5. Incompatible materials

- * Materials to avoid : Oxidizing agents , Strong acids , Alkali- and earthalkali-metals , Aluminium , Copper , Several synthetics , Rubber , Coating .

10.6. Hazardous decomposition products

Hazardous Decomposition Products : Fire may liberate carbon oxides (CO) and smoke.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity

- * - Inhalation : Irritating to respiratory system.
Exposure to high concentrations may cause lowering of consciousness.
Symptoms include: Sore throat , Cough , Shortness of breath , Drowsiness .
• n-Butanol : LC50 (Rat, inhalation, 4 h) : > 17,76 mg/l
- * - Skin contact : Irritating to skin. Product degreases skin.
Symptoms include: Redness , Pain .
• n-Butanol : LD50 (Rabbit, dermal) : 3430 mg/kg
- * - Eye contact : Strong irritation to eyes.
Symptoms include: Redness , Pain , Bad vision , Corneal damage .
- * - Ingestion : Harmful if swallowed.
Symptoms include: Abdominal pain , Diarrhea , Vomiting .
• n-Butanol : LD50 (Rat, oral) : 2292 mg/kg
- * Skin corrosion/irritation : Repeated exposure may cause skin dryness or cracking.
- * Serious eye damage/irritation : Causes serious eye damage.
- * Aspiration hazard : Ingestion of this product may lead to chemical pneumonia and even death.
- * 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 : Irritating to respiratory system.
High concentrations may produce central nervous system depression and loss of consciousness (slightly narcotical effect).
- * Specific target organ toxicity - repeated exposure : To human : Listed not for organ toxicity .
For animals : Target organ : Liver , Central nervous system .

12. Ecological information

12.1. Toxicity

- * Ecotoxicity : • n-Butanol : EC50 (Daphnia magna, 48 h) : 1328 mg/l
• n-Butanol : LC50 (Fish, 96 h) : 1376 mg/l

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12. Ecological information (continued)

12.2. Persistence and degradability

* Persistence and degradability : • n-Butanol : Persistence and degradability : Easily biodegradable .

12.3. Bioaccumulative potential

Bioaccumulation : • n-Butanol : Bioaccumulation : Bioaccumulation not expected .

12.4. Mobility in soil

* Mobility : • n-Butanol : Mobility : Moderatly soluble in water .

12.5. Results of PBT and vPvB assessment

* Evaluation : • n-Butanol : 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.

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.

14. Transport information

14.1. UN number

UN Number : 1120

14.2. UN proper shipping name

* ADR Name : UN 1120 Butanols, 3, III, (D/E)

* ADN Name : UN 1120 Butanols , 3, III

* IMDG Name : UN 1120 Butanols , 3, III, (35°C)

14.3. Transport hazard classe(s)

Class : 3

14.4. Packing group

Packaging Group : III

14.5. Environmental hazards

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14. Transport information (continued)

- * 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

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

- * Type ship : 3
- * Pollution category : Z

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.
Korean inventory (KECI): Listed in inventory.
Japanese inventory (ENCS): Listed in inventory.
Philippine inventory (PICCS): Listed in inventory.
Inventory of the United States (TSCA): Listed in inventory.
- * NFPA n° : 2-3-0
- * 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 substance(s) that make up this material or for the material itself.

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.

BUTANOL NORMAL**Code : 11133****16. Other information (continued)**

- Changes : General revision .
- * 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>
- R-phrases(s) : R10 - Flammable.
R22 - Harmful if swallowed.
R37/38 - Irritating to respiratory system and skin.
R41 - Risk of serious damage to eyes.
R67 - Vapours may cause drowsiness and dizziness.
- * (EU)H-statement(s) : H226 - Flammable liquid and vapour.
H302 - Harmful if swallowed.
H315 - Causes skin irritation.
H318 - Causes serious eye damage.
H335 - May cause respiratory irritation.
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
NVCI : 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-Butanol

Version 1.1

Print Date 15.01.2013

Revision Date 15.01.2013

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, 6a	NA	ES2682
2	Use as an intermediate	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9	6a	NA	ES2691
3	Distribution of substance	3	8, 9	NA	1, 2, 3, 4, 8a, 8b, 9, 15	1, 2	NA	ES2701
4	Distribution of substance	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 15	8a, 8b	NA	ES3022
5	Formulation & (re)packing of substances and mixtures	3	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 15	2	NA	ES2693
6	Uses in coatings	3	NA	NA	1, 2, 3, 4, 5, 7, 8a, 8b, 9, 10, 13, 15	4	NA	ES2737
7	Uses in coatings	22	NA	NA	1, 2, 3, 4, 5, 8a, 8b, 9, 10, 11, 13, 15, 19	8a, 8c, 8d, 8f	NA	ES2743
8	Uses in coatings	21	NA	1, 4, 9a, 9c, 15, 18, 23, 24, 31	NA	8a, 8c, 8d, 8f	NA	ES3024
9	Use in Cleaning Agents	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13	4	NA	ES2747
10	Use in Cleaning Agents	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13	8a, 8d	NA	ES2966
11	Use in Cleaning Agents	21	NA	4, 9a, 9c, 24, 35, 38	NA	8a, 8d	NA	ES3047
12	Use as lubricants	3	NA	NA	1, 2, 3, 4, 7, 8a, 8b, 9, 10, 13, 17, 18	4, 7	NA	ES2971
13	Use as lubricants	22	NA	NA	1, 2, 3, 4, 8a, 8b, 9, 10, 11, 13, 17, 18, 20	8a, 8d, 9a, 9b	NA	ES2975
14	Use as lubricants	21	NA	1, 24, 31, 35	NA	8a, 8d, 9a, 9b	NA	ES3099
15	Use in laboratories	22	NA	NA	10, 15	8a	NA	ES3020

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16	Use in metal working fluids / rolling oils	3	NA	NA	1, 2, 3, 5, 7, 8a, 8b, 9, 10, 13, 17	4	NA	ES2849
17	Use in metal working fluids / rolling oils	22	NA	NA	1, 2, 3, 5, 8a, 8b, 10, 11, 13, 17	8a, 8d	NA	ES3013

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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 ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC6a, ERC4

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
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 from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 97 %)(PROC8b)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related	Use suitable eye protection and gloves.	

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to personal protection, hygiene and health evaluation

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long term - systemic	77,13mg/m ³	0,249
PROC15	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.
 Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	735 kg
	Annual amount per site	242705 kg
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,05 %
	Emission or Release Factor: Water	0,002 %
	Emission or Release Factor: Soil	0,1 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

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

Product characteristics	Concentration of the	Covers percentage substance in the product up to
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	Substance in Mixture/Article	100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC9)	
	Transfer from/pouring from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 97 %)(PROC8b)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0128mg/L	0,1562
---	---	Fresh water sediment	PEC	0,0905mg/kg dwt	0,5086
---	---	Marine water	PEC	0,0014mg/L	0,1746
---	---	Marine sediment	PEC	0,0101mg/kg dwt	0,5685
---	---	Agricultural soil	PEC	0,0030mg/kg dwt	0,1981
---	---	Sewage treatment plant (STP)	PEC	0,0922mg/L	0,000

Workers

ECETOC TRA Version 2 with modifications has been used.

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
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PROC1	---	worker inhalation, long term - systemic	0,031mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.
 Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
 Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	13 kg
	Annual amount per site	197621 kg
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,01 %
	Emission or Release Factor: Water	0,001 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

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

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC5, PROC8a, PROC8b, PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC5, PROC8a, PROC9)	
	Transfer from/pouring from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 97 %)(PROC8b)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0037mg/L	0,0448
---	---	Fresh water sediment	PEC	0,0230mg/kg dwt	0,1459
---	---	Marine water	PEC	0,0005mg/L	0,0082
---	---	Marine sediment	PEC	0,0037mg/kg dwt	0,2057
---	---	Agricultural soil	PEC	0,0030mg/kg dwt	0,1992
---	---	Sewage treatment plant (STP)	PEC	0,008mg/L	0,0000

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Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC15	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.
 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.

Additional good practice advice beyond the REACH Chemical Safety Assessment

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1. Short title of Exposure Scenario 4: Distribution of substance

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>PROC15: Use as laboratory reagent</p>
Environmental Release Categories	<p>ERC8a: Wide dispersive indoor use of processing aids in open systems</p> <p>ERC8b: Wide dispersive indoor use of reactive substances in open systems</p>

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8b

No exposure assessment presented for the environment.

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Avoid carrying out operation for more than 4 hours.(PROC8a, PROC8b, PROC9)	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Organisational measures to prevent /limit releases, dispersion and exposure	<p>Ensure minimization of manual phases</p> <p>Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures.</p> <p>Supervision in place to check that the RMMs in place are being used correctly and OC's followed</p>	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

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Environment

No exposure assessment presented for the environment.

Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	---
PROC2	---	worker inhalation, long term - systemic	61,75mg/m ³	---
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	---
PROC4	---	worker inhalation, long term - systemic	154,38mg/m ³	---
PROC8a	---	worker inhalation, long term - systemic	185,25mg/m ³	---
PROC8b	---	worker inhalation, long term - systemic	92,63mg/m ³	---
PROC9	---	worker inhalation, long term - systemic	185,25mg/m ³	---
PROC15	---	worker inhalation, long term - systemic	30,88mg/m ³	---

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.

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: Formulation & (re)packing of substances and mixtures

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	133 kg
	Annual amount per site	40000 kg
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,05 %
	Emission or Release Factor: Water	0,02 %
	Emission or Release Factor: Soil	0,01 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

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

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC5, PROC8a, PROC8b, PROC9)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC5, PROC8a, PROC9)	
	Transfer from/pouring from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 97 %)(PROC8b)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0203mg/L	0,2472
---	---	Fresh water sediment	PEC	0,1433mg/kg dwt	0,8049
---	---	Marine water	PEC	0,0022mg/L	0,2656
---	---	Marine sediment	PEC	0,0154mg/kg dwt	0,8648
---	---	Agricultural soil	PEC	0,0029mg/kg dwt	0,1956
---	---	Sewage treatment plant (STP)	PEC	0,1668mg/L	0,0001

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Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0995
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC5	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0497
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0497
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0497
PROC15	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0995

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.
 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.

Additional good practice advice beyond the REACH Chemical Safety Assessment

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1. Short title of Exposure Scenario 6: 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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	106 kg
	Annual amount per site	31804 kg
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,18 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

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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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13)	
	Transfer from/pouring from containers Dedicated facility	Provide extraction ventilation at points where emissions occur. (Efficiency: 97 %)(PROC8b)
	Spraying	Ensure that a spraying booth is used(PROC7)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC7)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC7)
	Spraying	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	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0036mg/L	0,0438
---	---	Fresh water sediment	PEC	0,0254mg/kg dwt	0,1426

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---	---	Marine water	PEC	0,0005mg/L	0,0622
---	---	Marine sediment	PEC	0,0036mg/kg dwt	0,2024
---	---	Agricultural soil	PEC	0,0029mg/kg dwt	0,1957
---	---	Sewage treatment plant (STP)	PEC	0mg/L	0

Workers

PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC15 StoffenManager (inhalation exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC5	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC7	---	worker inhalation, long term - systemic	0mg/m ³	0
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC10	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC13	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC15	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures /

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Operational Conditions are adopted, as indicated in Section 2
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.
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.

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 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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount for wide dispersive uses	1 kg
	Fraction of EU tonnage used in region:	0,1
	Fraction of Regional tonnage used locally:	0,0005
	Amounts used in the EU (tonnes/year)	7700 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	98 %

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	Emission or Release Factor: Water	1 %
	Emission or Release Factor: Soil	1 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC10, 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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Avoid carrying out operation for more than 4 hours.(PROC5, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC19)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

2.3 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion	Ensure that a spraying booth is used	

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from source towards the worker

Organisational measures to prevent /limit releases, dispersion and exposure

- Clean equipment and the work area every day.
- Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).
- Regular inspection and maintenance of equipment and machines.

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

Ensure that fresh air is supplied to the breathing zone of the operator and exhaust air is removed in his back!

2.4 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Frequency of use	< 6 hours/day
	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 47 %)	
Organisational measures to prevent /limit releases, dispersion and exposure	Clean equipment and the work area every day.	
	Regular inspection and maintenance of equipment and machines.	
Conditions and measures related to personal protection, hygiene and health evaluation	Ensure that fresh air is supplied to the breathing zone of the operator and exhaust air is removed in his back!	
	If above technical/organisational control measures are not feasible, then adopt following PPE: Wear respiratory protection. (Efficiency: 80 %)	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0037mg/L	0,0446
---	---	Fresh water sediment	PEC	0,0258mg/kg dwt	0,1452
---	---	Marine water	PEC	0,0005mg/L	0,0630
---	---	Marine sediment	PEC	0,0037mg/kg dwt	0,2051
---	---	Agricultural soil	PEC	0,0030mg/kg	0,1983

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---	---	Sewage treatment plant (STP)	PEC	dwt 0,0007mg/L	0,0000
-----	-----	------------------------------	-----	-------------------	--------

Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC5	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC8a	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC8b	---	worker inhalation, long term - systemic	92,63mg/m ³	0,2988
PROC9	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC10	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC13	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC15	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0992
PROC19	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC11	With spray booth	worker inhalation, long term - systemic	0mg/m ³	0
PROC11	with local exhaust ventilation	worker inhalation, long term - systemic	300mg/m ³	0,9677
PROC11	With respiratory protection, 80%	worker inhalation, long term - systemic	187,5mg/m ³	0,6048

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.

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Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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.
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.

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 8: 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 PC9c: Finger paints PC15: Non-metal-surface treatment products PC18: Ink and toners PC23: Leather tanning, dye, finishing, impregnation and care products PC24: Lubricants, greases, release products PC31: Polishes and wax blends
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

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC1: Glues, hobby use

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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 0,2%
	Physical Form (at time of use)	liquid

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	use)	
	Vapour pressure	100 hPa
Amount used	Amount used per event	6390 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	6 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Use only in well-ventilated areas.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	No specific risk management measure identified beyond those operational conditions stated.	
2.4 Contributing scenario controlling consumer exposure for: PC1: Glues DIY-use (carpet glue, tile glue, wood parquet glue)		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	9000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	minutes/event
Other given operational conditions affecting consumers exposure	Room size	53 m3
	Use only in well-ventilated areas.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.
2.5 Contributing scenario controlling consumer exposure for: PC1: Glue from spray		
Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
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Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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	100 hPa
Amount used	Amount used per event	390 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	2 minutes/event
Other given operational conditions affecting consumers exposure	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	Avoid contact with eyes.

2.8 Contributing scenario controlling consumer exposure for: PC4: Pouring into radiator

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 10%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	10 minutes/event
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	Avoid contact with skin.
2.9 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	100 hPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	15 minutes/event
Other given operational conditions affecting consumers exposure	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	Avoid contact with skin.
2.10 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	100 hPa
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Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.
2.11 Contributing scenario controlling consumer exposure for: PC9a: Solvent rich, high solid, water borne paint		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	1300 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	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	Avoid contact with eyes.
2.12 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	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	20 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
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Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 4%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	30 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

2.14 Contributing scenario controlling consumer exposure for: PC9c: Finger paints

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	1,35 g
Frequency and duration of use	Frequency of use	1 Times per day
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

2.15 Contributing scenario controlling consumer exposure for: PC15: Waterborne latex wall paint

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid

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	Vapour pressure	100 hPa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.
2.16 Contributing scenario controlling consumer exposure for: PC15: Solvent rich, high solid, water borne paint		
Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	1300 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Use only in well-ventilated areas.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.
2.17 Contributing scenario controlling consumer exposure for: PC15: 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	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	20 minutes/event
Other given operational conditions affecting consumers	Room size	20 m ³
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exposure	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

2.18 Contributing scenario controlling consumer exposure for: PC15: 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	100 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Use only in well-ventilated areas.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

2.19 Contributing scenario controlling consumer exposure for: PC18

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product: 0% - 4%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	40 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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

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Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 50%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

2.21 Contributing scenario controlling consumer exposure for: PC23: 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	100 hPa
Amount used	Amount used per event	56 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

2.22 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

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	Vapour pressure	100 hPa
Amount used	Amount used per event	550 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m ³
	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	Avoid contact with skin.

2.23 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	100 hPa
Amount used	Amount used per event	550 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

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Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC1: Glues, hobby use	---	worker inhalation, long term - systemic	51,15mg/m ³	---

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PC1: Glues DIY-use	---	worker inhalation, long term - systemic	42,60mg/m ³	---
PC1: Glue from spray	---	worker inhalation, long term - systemic	48,40mg/m ³	---
PC1: Sealants	---	worker inhalation, long term - systemic	48,0mg/m ³	---
PC4: Washing car window	---	worker inhalation, long term - systemic	0,15mg/m ³	---
PC4: Pouring into radiator	---	worker inhalation, long term - systemic	0,001mg/m ³	---
PC4: Lock de-icer	---	worker inhalation, long term - systemic	49,05mg/m ³	---
PC9a: Waterborne latex wall paint	---	worker inhalation, long term - systemic	42,90mg/kg bw/day	---
PC9a: Solvent rich, high solid, water borne paint	---	worker inhalation, long term - systemic	52,50mg/m ³	---
PC9a: Aerosol spray can	---	worker inhalation, long term - systemic	1,30mg/m ³	---
PC9a: Removers	---	worker inhalation, long term - systemic	48,30mg/m ³	---
PC9c: Finger paints	---	Worker - dermal, long-term - systemic	1,35mg/m ³	---
PC15: Waterborne latex wall paint	---	worker inhalation, long term - systemic	42,90mg/m ³	---
PC15: Solvent rich, high solid, water borne paint	---	worker inhalation, long term - systemic	52,50mg/m ³	---
PC15: Aerosol spray can	---	worker inhalation, long term - systemic	1,30mg/m ³	---
PC15: Removers	---	worker inhalation, long term - systemic	48,30mg/m ³	---
PC18: Refilling of toners	---	worker inhalation, long term - systemic	44,42mg/m ³	---
PC23: Polishes, wax/cream	---	worker inhalation, long term - systemic	32,10mg/m ³	---
PC23: Polishes, spray	---	worker inhalation, long term - systemic	0,38mg/m ³	---
PC31: Polishes, wax / cream	---	worker inhalation, long term - systemic	52,00mg/m ³	---
PC31: Polishes, spray	---	worker inhalation, long term - systemic	0,38mg/m ³	---

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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.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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.

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

Main User Groups	SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
Process categories	<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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	106,8 kg
	Annual amount per site	2136 kg
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	30 %
	Emission or Release Factor: Water	0,01 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

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

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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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC9, PROC10, PROC13)	
	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)	
	Spraying	Ensure that a spraying booth is used(PROC7)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC7)
	Spraying	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0067mg/L	0,0820
---	---	Fresh water sediment	PEC	0,0475mg/kg dwt	0,2671
---	---	Marine water	PEC	0,0008mg/L	0,1004
---	---	Marine sediment	PEC	0,0058mg/kg dwt	0,3269

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---	---	Agricultural soil	PEC	0,0091mg/kg dwt	0,5290
---	---	Sewage treatment plant (STP)	PEC	0,0314mg/L	0,0000

Workers

PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13 StoffenManager (inhalation exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC7	---	worker inhalation, long term - systemic	0mg/m ³	0
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC10	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC13	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.
 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.

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

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 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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount for wide dispersive uses	0,1 kg
	Fraction of EU tonnage used in region:	0,1
	Fraction of Regional tonnage used locally:	0,0005
	Amounts used in the EU (tonnes/year)	720 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	2 %
	Emission or Release Factor: Water	0 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage	2.000 m3/d

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treatment plant effluent	
Degradation efficiency	87,4 %
Sludge Treatment	Do not apply industrial sludge to natural soils.

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Avoid carrying out operation for more than 4 hours.(PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

2.3 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Spraying	Ensure that a spraying booth is used(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC11)

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	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)
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2.4 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Frequency of use	6 hours/day
Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Spraying	Provide extract ventilation to points where emissions occur. (Efficiency: 47 %)(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)

2.5 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Spraying	Provide enhanced general ventilation by mechanical means. (Efficiency: 47 %)(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	If above technical/organisational control measures are not feasible, then adopt following PPE: Wear respiratory protection. or Limit exposure duration to 4h (Efficiency: 80 %)(PROC11)	

3. Exposure estimation and reference to its source

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Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0036mg/L	0,0438
---	---	Fresh water sediment	PEC	0,0254mg/kg dwt	0,1426
---	---	Marine water	PEC	0,0005mg/L	0,0622
---	---	Marine sediment	PEC	0,0036mg/kg dwt	0,2024
---	---	Agricultural soil	PEC	0,0029mg/kg dwt	0,1951
---	---	Sewage treatment plant (STP)	PEC	0,0000mg/L	0,0000

Workers

PROC11 StoffenManager (inhalation exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC8a	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC8b	---	worker inhalation, long term - systemic	92,63mg/m ³	0,2988
PROC9	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC10	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC13	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC11	With spray booth	worker inhalation, long term - systemic	0mg/m ³	0
PROC11	with local exhaust ventilation	worker inhalation, long term - systemic	300mg/m ³	0,9677
PROC11	With respiratory	worker inhalation, long	187,5mg/m ³	0,6048

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protection, or, reduced duration	term - systemic		
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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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.
 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.

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 11: 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 PC9c: Finger paints 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

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC4: Washing car window

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	0,5 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	2 minutes/event
Other given operational conditions affecting consumers exposure	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	Avoid contact with eyes.

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	100 hPa
Amount used	Amount used per event	2000 g

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Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	10 minutes/event
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	Avoid contact with skin.

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	100 hPa
Amount used	Amount used per event	4 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	15 Hours/event
Other given operational conditions affecting consumers exposure	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	Avoid contact with skin.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	3750 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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protection and hygiene)

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 percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	1300 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	132 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	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	Avoid contact with eyes.

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	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	20 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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	Concentration of substance in product: 0% - 4%
	Physical Form (at time of use)	liquid

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	Vapour pressure	100 hPa
Amount used	Amount used per event	2000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

2.9 Contributing scenario controlling consumer exposure for: PC9c: Finger paints

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 1 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used		1,35 g
	(swallowed)	
Frequency and duration of use	Frequency of use	1 Times per day
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	15 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	30 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	

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Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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	100 hPa

Amount used	Amount used per event	500 g
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Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	1 minutes/event

Other given operational conditions affecting consumers exposure	Covers use under typical household ventilation.	
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Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

2.12 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 8%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa

Amount used	Amount used per event	880 g
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Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event

Other given operational conditions affecting consumers exposure	Room size	58 m3
	Covers use under typical household ventilation.	

Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	25 minutes/event
Other given operational conditions affecting consumers exposure	Room size	10 m ³
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	30 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	25 minutes/event
Other given operational conditions affecting consumers exposure	Room size	10 m ³
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

2.15 Contributing scenario controlling consumer exposure for: PC38

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

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	Vapour pressure	100 hPa
Amount used	Amount used per event	12 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	1 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

Consumers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PC4: Washing car window	---	worker inhalation, long term - systemic	0,15mg/m ³	---
PC4: Pouring into radiator	---	worker inhalation, long term - systemic	0,001mg/m ³	---
PC4: Lock de-icer	---	worker inhalation, long term - systemic	49,05mg/m ³	---
PC9a: Waterborne latex wall paint	---	worker inhalation, long term - systemic	42,90mg/m ³	---
PC9a: Solvent rich, high solid, water borne paint	---	worker inhalation, long term - systemic	52,50mg/m ³	---
PC9a: Aerosol spray can	---	worker inhalation, long term - systemic	1,30mg/m ³	---
PC9a: Removers	---	worker inhalation, long term - systemic	48,30mg/m ³	---
PC9c: Finger paints	---	worker inhalation, long term - systemic	1,35mg/kg bw/day	---
PC35: Laundry and dish washing products	---	worker inhalation, long term - systemic	32,40mg/m ³	---
PC35: Cleaners,	---	worker inhalation, long	46,50mg/m ³	---

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liquids		term - systemic		
PC35: Cleaners, trigger sprays	---	worker inhalation, long term - systemic	6,37mg/m ³	---
PC38	---	worker inhalation, long term - systemic	45,12mg/m ³	---

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.

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1. Short title of Exposure Scenario 12: 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> <p>PROC18: Greasing at high energy conditions</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, ERC7

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	145 tonnes
	Annual amount per site	506 tonnes/km
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,5 %
	Emission or Release Factor: Water	0,05 %
	Emission or Release Factor: Soil	0,1 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %
	Sludge Treatment	Do not apply industrial sludge to natural soils.

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2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17, PROC18

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Physical Form (at time of use)	liquid
	Vapour pressure	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC10, PROC13)	
	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b, PROC9)	
	Spraying	Ensure that a spraying booth is used(PROC7)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC7)
	Spraying	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

2.3 Contributing scenario controlling worker exposure for: 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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
	Operation is carried out at elevated temperature (> 20°C above ambient	

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	temperature).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 95 %)(PROC17)

2.4 Contributing scenario controlling worker exposure for: PROC18

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	> 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 95 %)(PROC18)	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,005mg/L	0,060
---	---	Fresh water sediment	PEC	0,035mg/kg dwt	0,197
---	---	Marine water	PEC	0,001mg/L	0,079
---	---	Marine sediment	PEC	0,005mg/kg dwt	0,256
---	---	Agricultural soil	PEC	0,004mg/kg dwt	0,267
---	---	Sewage treatment plant (STP)	PEC	0,014mg/L	0,000

Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long	77,19mg/m ³	0,2490

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		term - systemic		
PROC4	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC7	---	worker inhalation, long term - systemic	0mg/m ³	0,0000
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC10	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC13	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC17	---	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC18	---	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC17	Elevated temperature	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC18	Elevated temperatures	worker inhalation, long term - systemic	15,44mg/m ³	0,0498

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.

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

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.

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.

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 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> <p>PROC17: Lubrication at high energy conditions and in partly open process</p> <p>PROC18: Greasing at high energy conditions</p> <p>PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems</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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount for wide dispersive uses	0,01 kg
	Amounts used in the EU (tonnes/year)	93 ton(s)/year
	Fraction of EU tonnage used in region:	0,1
	Fraction of Regional tonnage used locally:	0,0005
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	1 %

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	Emission or Release Factor: Water	1 %
	Emission or Release Factor: Soil	1 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC20

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Avoid carrying out operation for more than 4 hours.(PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

2.3 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion	Spraying	Ensure that a spraying booth is used(PROC11)

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from source towards the worker

Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)

Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.
---	---

2.4 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa

Frequency and duration of use	Frequency of use	6 hours/day
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Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
---	---------------------	--

Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 47 %)(PROC11)	
--	---	--

Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)

Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.
---	---

2.5 Contributing scenario controlling worker exposure for: PROC11

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
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	Physical Form (at time of use)	liquid
	Vapour pressure	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 47 %)(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	
	Spraying	If above technical/organisational control measures are not feasible, then adopt following PPE: Wear respiratory protection. or Avoid carrying out operation for more than 4 hours. (Efficiency: 80 %)(PROC11)
2.6 Contributing scenario controlling worker exposure for: 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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC17)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC17)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene	Use suitable eye protection and gloves.	
	If no adequate ventilation is available:	
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and health evaluation Avoid carrying out operation for more than 1 hour.(PROC17)

2.7 Contributing scenario controlling worker exposure for: 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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC17)	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).(PROC17)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC17)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	
	If no adequate ventilation is available: Wear respiratory protection. (Efficiency: 90 %)(PROC17)	

2.8 Contributing scenario controlling worker exposure for: PROC18

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC18)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC18)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene	Use suitable eye protection and gloves.	
	If no adequate ventilation is available:	

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and health evaluation Avoid carrying out operation for more than 1 hour.(PROC18)

2.9 Contributing scenario controlling worker exposure for: PROC18

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC18)	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).(PROC18)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC18)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	
	If no adequate ventilation is available: Wear respiratory protection. (Efficiency: 90 %)(PROC18)	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0036mg/L	0,0438
---	---	Fresh water sediment	PEC	0,0254mg/kg dwt	0,1426
---	---	Marine water	PEC	0,0005mg/L	0,0622
---	---	Marine sediment	PEC	0,0036mg/kg dwt	0,2025
---	---	Agricultural soil	PEC	0,0029mg/kg dwt	0,1951
---	---	Sewage treatment plant (STP)	PEC	0,0000mg/L	0,0000

Workers

PROC11 StoffenManager (inhalation exposure)

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PROC11 Stoffenmanager V4.0

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC4	---	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC8a	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC8b	---	worker inhalation, long term - systemic	92,63mg/m ³	0,2988
PROC9	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC10	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC13	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC20	---	worker inhalation, long term - systemic	61,75mg/m ³	0,1992
PROC11	With spray booth	worker inhalation, long term - systemic	0mg/m ³	0
PROC11	with local exhaust ventilation	worker inhalation, long term - systemic	300mg/m ³	0,9677
PROC11	With respiratory protection, or, reduced duration	worker inhalation, long term - systemic	187,50mg/m ³	0,6048
PROC17	---	worker inhalation, long term - systemic	123,50mg/m ³	0,3984
PROC17	Elevated temperatures	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC18	---	worker inhalation, long term - systemic	123,50mg/m ³	0,394
PROC18	Elevated temperatures	worker inhalation, long term - systemic	154,38mg/m ³	0,4980

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

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2

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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.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.
Assumes a good basic standard of occupational hygiene is implemented.

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1. Short title of Exposure Scenario 14: Use as lubricants

Main User Groups	SU 21: Consumer uses: Private households (= general public = consumers)
Chemical product category	PC1: Adhesives, sealants PC24: Lubricants, greases, release products PC31: Polishes and wax blends PC35: Washing and cleaning products (including solvent based 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 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

No exposure assessment presented for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC1: Glues, hobby use

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	9 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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 0,2%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	6390 g

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Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	6 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	No specific risk management measure identified beyond those operational conditions stated.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Concentration of substance in product : 0% - 2%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	9000 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	75 minutes/event
Other given operational conditions affecting consumers exposure	Room size	53 m3
	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	Avoid contact with eyes.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 30%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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protection and hygiene)

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	100 hPa
Amount used	Amount used per event	390 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

2.7 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	100 hPa
Amount used	Amount used per event	550 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m ³
	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	Avoid contact with skin.

2.8 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%
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	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	15 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	30 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m3
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

2.10 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 percentage substance in the product up to 5 %.
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	15 g

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Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	30 minutes/event
Other given operational conditions affecting consumers exposure	Room size	20 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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 8%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	880 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	4 Hours/event
Other given operational conditions affecting consumers exposure	Room size	58 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with eyes.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	25 minutes/event
Other given operational conditions affecting consumers exposure	Room size	10 m ³
	Covers use under typical household ventilation.	
Conditions and measures related	Consumer Measures	Avoid contact with skin.

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to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers concentrations up to 20%
	Physical Form (at time of use)	liquid
	Vapour pressure	100 hPa
Amount used	Amount used per event	30 g
Frequency and duration of use	Frequency of use	1 Times per day
	Frequency of use	25 minutes/event
Other given operational conditions affecting consumers exposure	Room size	10 m ³
	Covers use under typical household ventilation.	
Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)	Consumer Measures	Avoid contact with skin.

3. Exposure estimation and reference to its source

Environment

No exposure assessment presented for the environment.

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.

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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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount for wide dispersive uses	0,002 kg
	Amounts used in the EU (tonnes/year)	16 ton(s)/year
	Fraction of Regional tonnage used locally:	0,0005
	Fraction of EU tonnage used in region:	0,1
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	50 %
	Emission or Release Factor: Water	50 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %

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

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	Vapour pressure	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).(PROC15)	
	Avoid carrying out operation for more than 4 hours.(PROC10)	
Other operational conditions affecting workers exposure	Indoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0036mg/L	0,0439
---	---	Fresh water sediment	PEC	0,0254mg/kg dwt	0,1428
---	---	Marine water	PEC	0,0005mg/L	0,0623
---	---	Marine sediment	PEC	0,0036mg/kg dwt	0,2027
---	---	Agricultural soil	PEC	0,0029mg/kg dwt	0,1954
---	---	Sewage treatment plant (STP)	PEC	0,0001mg/L	0,0000

Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC10	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC15	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996

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

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be necessary to define appropriate site-specific risk management measures.
Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
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.

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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount per site	2 ton(s)/day
	Annual amount per site	40 ton(s)/year
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	0,6 %
	Emission or Release Factor: Water	0,1 %
	Emission or Release Factor: Soil	0 %
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %

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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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13)	
Technical conditions and measures to control dispersion from source towards the worker	Provide extraction ventilation at points where emissions occur. (Efficiency: 90 %)(PROC8a, PROC9, PROC10, PROC13)	
	Provide extract ventilation to points where emissions occur. (Efficiency: 97 %)(PROC8b)	
	Spraying	Ensure that a spraying booth is used(PROC7)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC7)
	Spraying	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC7)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC7)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

2.3 Contributing scenario controlling worker exposure for: 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	> 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
	Operation is carried out at elevated temperature (> 20°C above ambient	

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	temperature).
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 95 %)(PROC17)

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0161mg/L	0,1968
---	---	Fresh water sediment	PEC	0,1140mg/kg dwt	0,6406
---	---	Marine water	PEC	0,0018mg/L	0,2152
---	---	Marine sediment	PEC	0,0125mg/kg dwt	0,7005
---	---	Agricultural soil	PEC	0,0120mg/kg dwt	0,8032
---	---	Sewage treatment plant (STP)	PEC	0,1254mg/L	0,0001

Workers

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long term - systemic	30,88mg/m ³	0,0996
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC5	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC7	---	worker inhalation, long term - systemic	0mg/m ³	0
PROC8a	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC8b	---	worker inhalation, long term - systemic	4,63mg/m ³	0,0149
PROC9	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC10	---	worker inhalation, long term - systemic	15,44mg/m ³	0,0498
PROC13	---	worker inhalation, long	15,44mg/m ³	0,0498

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		term - systemic		
PROC17	---	worker inhalation, long term - systemic	154,38mg/m ³	0,4980
PROC17	Elevated temperature	worker inhalation, long term - systemic	15,44mg/m ³	0,0498

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

Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.

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	<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

Product characteristics	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
	Concentration of the Substance in Mixture/Article	Covers percentage substance in the product up to 100 % (unless stated differently).
Amount used	Daily amount for wide dispersive uses	0,014 ton(s)/day
	Amounts used in the EU (tonnes/year)	100000 ton(s)/year
	Fraction of Regional tonnage used locally:	0,0005
	Fraction of EU tonnage used in region:	0,1
Environment factors not influenced by risk management	Flow rate of receiving surface water	18.000 m3/d
	Dilution Factor (River)	10
	Dilution Factor (Coastal Areas)	100
Other given operational conditions affecting environmental exposure	Emission or Release Factor: Air	40 %
	Emission or Release Factor: Water	5 %
	Emission or Release	5 %

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	Factor: Soil	
Conditions and measures related to sewage treatment plant	Flow rate of sewage treatment plant effluent	2.000 m3/d
	Degradation efficiency	87,4 %

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
	Avoid carrying out operation for more than 4 hours.(PROC5, PROC8a, PROC8b, PROC10, PROC13)	
Other operational conditions affecting workers exposure	Indoor/Outdoor use.	
	Assumes use at not more than 20°C above ambient temperature, unless stated differently.	
	Indoor use.(PROC11, PROC17)	
Technical conditions and measures to control dispersion from source towards the worker	Ensure that a spraying booth is used(PROC11)	
	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC17)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).(PROC11)	
	Regular inspection and maintenance of equipment and machines.(PROC11)	
	Clean equipment and the work area every day.(PROC11)	
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	
	If no adequate ventilation is available: Avoid carrying out operation for more than 1 hour.(PROC17)	

2.3 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Frequency of use	< 6 hours/day

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Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Spraying	Provide extraction ventilation at points where emissions occur. (Efficiency: 47 %)(PROC11)
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	

2.4 Contributing scenario controlling worker exposure for: PROC11

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	5 - 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.(PROC11)	
Technical conditions and measures to control dispersion from source towards the worker	Provide enhanced general ventilation by mechanical means. (Efficiency: 47 %)(PROC11)	
Organisational measures to prevent /limit releases, dispersion and exposure	Ensure minimization of manual phases Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures. Supervision in place to check that the RMMs in place are being used correctly and OC's followed	
	Spraying	Clean equipment and the work area every day.(PROC11)
	Spraying	Regular inspection and maintenance of equipment and machines.(PROC11)
Conditions and measures related to personal protection, hygiene and health evaluation	Use suitable eye protection and gloves.	
	Spraying	If above technical/organisational control measures are not feasible, then adopt following PPE: Wear respiratory protection. or Avoid carrying out operation for more than 4 hours.

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(Efficiency: 80 %)(PROC11)

2.5 Contributing scenario controlling worker exposure for: 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	> 100 hPa
Frequency and duration of use	Covers daily exposures up to 8 hours (unless stated differently).	
Other operational conditions affecting workers exposure	Indoor use.	
	Operation is carried out at elevated temperature (> 20°C above ambient temperature).	
Technical conditions and measures to control dispersion from source towards the worker	Provide extract ventilation to points where emissions occur. (Efficiency: 90 %)(PROC17)	
Conditions and measures related to personal protection, hygiene and health evaluation	If no adequate ventilation is available:	
	Wear respiratory protection (Efficiency: 90 %)(PROC17)	

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Specific conditions	Compartment	Value	Level of Exposure	RCR
---	---	Fresh water	PEC	0,0079mg/L	0,0962
---	---	Fresh water sediment	PEC	0,0557mg/kg dwt	0,3131
---	---	Marine water	PEC	0,0009mg/L	0,1146
---	---	Marine sediment	PEC	0,0066mg/kg dwt	0,3730
---	---	Agricultural soil	PEC	0,0060mg/kg dwt	0,4027
---	---	Sewage treatment plant (STP)	PEC	0,0430mg/L	0,0000

Workers

PROC11, PROC13, PROC17 StoffenManager (inhalation exposure)

Contributing Scenario	Specific conditions	Exposure routes	Level of Exposure	RCR
PROC1	---	worker inhalation, long term - systemic	0,03mg/m ³	0,0001
PROC2	---	worker inhalation, long	61,75mg/m ³	0,1992

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Revision Date 15.01.2013

		term - systemic		
PROC3	---	worker inhalation, long term - systemic	77,19mg/m ³	0,2490
PROC5	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC8a	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC8b	---	worker inhalation, long term - systemic	92,63mg/m ³	0,2988
PROC10	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC11	With spray booth	worker inhalation, long term - systemic	0mg/m ³	0
PROC13	---	worker inhalation, long term - systemic	185,25mg/m ³	0,5976
PROC17	---	worker inhalation, long term - systemic	123,50mg/m ³	0,4980
PROC11	with local exhaust ventilation	worker inhalation, long term - systemic	300mg/m ³	0,9677
PROC11	with local exhaust ventilation, or, reduced duration	worker inhalation, long term - systemic	187,50mg/m ³	0,6048
PROC17	Elevated temperatures	worker inhalation, long term - systemic	154,38mg/m ³	0,4980

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.
 Estimated exposures are not expected to exceed PNEC when the identified Risk Management Measures / Operational Conditions are adopted, as indicated in Section 2
 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.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Assumes a good basic standard of occupational hygiene is implemented.

COMPANY INFORMATION DISTRIBUTOR		
name	BRENNTAG N.V.	BRENNTAG Nederland B.V.
address	Nijverheidslaan 38 8540 Deerlijk	Donker Duyvisweg 44 3316 BM Dordrecht
country	Belgium	The Netherlands
phone number	+32 (0)56 77 69 44	+31 (0)78 65 44 944
fax number	+32 (0)56 77 57 11	+31 (0)78 65 44 919
website	www.brenntag.be	www.brenntag.nl
e-mail	info@brenntag.be	info@brenntag.nl
activities	Distribution and export of chemicals and raw materials	
VAT number	BE0405317567	NL001375945B01
recall procedure available	Yes	
emergency number (24/365)	+32 (0)56 77 69 44	+31 (0)78 6544 944
QUALITY SYSTEMS		
ISO 9001	Yes	Yes
ISO 14001	Yes	Yes
ISO 22000	Yes	Yes
FSSC 22000	Yes	Yes
GMP+ -feed	Yes	Yes
OHSAS18001	-	Yes
ESAD	Yes	Yes
other	-	AEO