

## SIBUR-KHIMPROM JSC

### SAFETY DATA SHEET

According to Regulations (EC) 1907/2006 (REACH), (EC) 1272/2008 (CLP) & (EU) 2015/830

### n-BUTANOL

Version: 3.0  
Date created: 15/01/2019

#### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

##### 1.1. Product identifier

Product form: Substance  
Substance name: Butan-1-ol  
EC index No.: 603-004-00-6  
EC No.: 200-751-6  
CAS-No.: 71-36-3  
REACH registration No: 01-2119484630-38-0007  
Formula: C<sub>4</sub>H<sub>10</sub>O  
Synonyms: Butyl alcohol, 1-butanol, propyl carbinol  
Trade names: n-butanol

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

###### 1.2.1. Relevant identified uses

Use of the substance/mixture: Distribution of substance (use in industrial settings)  
Distribution of substance (use in professional settings)  
Formulation (use in industrial settings)  
Formulation (use in professional settings)  
Use in Metal working fluids / rolling oils (industrial)  
Use in Metal working fluids / rolling oils (professional)  
Use as an intermediate (use in industrial settings)  
Use as a Process chemical (use in industrial settings)  
Use in Cleaning Agents (industrial)  
Use in Cleaning Agents (professional)  
Use in Cleaning Agents (consumer)  
Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (industrial)  
Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (professional)  
Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (consumer)  
Use in laboratories (use in industrial settings)  
Use in laboratories (use in professional settings)  
Use in Lubricants (industrial)  
Use in Lubricants (professional)  
Use in Lubricants (consumer)  
Consumer applications

*For the detailed identified uses of the product see Annex.*

Most common technical function of substance: Intermediates  
Fuels and fuel additives

### 1.2.2. Uses advised against

Restrictions on use: Uses other than those given in section 1.2.1 are not recommended unless an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled

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

#### Only representative

Company name: Gazprom Marketing and Trading France  
Address: 68 avenue des Champs-Élysées, 75008, Paris, France  
Contact Telephone: +33 1 42 99 73 50  
Fax: +33 1 42 99 73 99  
Email Address: didier.lebout@gazprom-mt.com

#### Manufacturer

Company name: Sibur-Khimprom JSC  
Address: 98, Promishlennaya str., Perm, Perm region, 614055, Russian Federation  
Contact phone: +7 3422 90-89-01 (Moscow, 7.00 to 15.00) - Chief Engineer  
Fax: +7 3422 90-86-60  
Email Address: mail-shp@sibur.ru  
Emergency Telephone: +7 3422 90-87-05 (round the clock)  
Importer: List of importers is available with the Only Representative

### 1.4. Emergency telephone number

Emergency phone in the country of delivery: **112** (Please note that emergency numbers may vary depending upon the country of delivery though 112 remains valid as universal number)

## SECTION 2. HAZARDS IDENTIFICATION

### 2.1. Classification of the substance or mixture

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Liquid 3 H226  
Acute Tox. 4 H302  
Skin Irrit. 2 H315  
Eye Damage 1 H318  
STOT Single Exp. 3 H335  
STOT Single Exp. 3 H336

Full text of hazard classes and H-statements: see section 16

### 2.2. Label elements

#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms

(CLP):



GHS02



GHS05



GHS07

Signal word (CLP): Danger

Hazard statements (CLP): H226: Flammable liquid and vapour.  
H302: Harmful if swallowed.

	H315: Causes skin irritation.
	H318: Causes serious eye damage.
	H335: May cause respiratory irritation (Affected organs: respiratory tract, skin, eyes).
	H336: May cause drowsiness or dizziness (Affected organs: Central nervous system).
Precautionary statements (CLP):	P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P233: Keep container tightly closed.
	P240: Ground and bond container and receiving equipment.
	P241: Use explosion-proof equipment.
	P242: Use non-sparking tools.
	P280: Wear protective gloves/protective clothing/eye protection/face protection.
	P303+P361+P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
	P370+P378: In case of fire: Use water spray/dry powder/alcohol-resistant foam/carbon dioxide to extinguish.
	P403+P235: Store in a well-ventilated place. Keep cool.
	P501: Dispose of contents/container in accordance with local regulations.
EUH-statements:	Not applicable

### 2.3. Other hazards

Other hazards not contributing to the classification: No other hazards identified.

Assessment PBT / vPvB: According to Annex XIII of Regulation (EC) No.1907/2006 (REACH):  
 - not fulfilling PBT (persistent/bioaccumulative/toxic) criteria;  
 - not fulfilling vPvB (very persistent/very bioaccumulative) criteria.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

### 3.1. Substance

Name	Product identifier	%	Classification [CLP]
butan-1-ol	(CAS-No.) 200-751-6 (EC No.) 71-36-3 (EC index No.) 603-004-00-6 (REACH-no) 01-2119484630-38-0007	99.0-99.9	H226; H302; H315; H318; H335; H336

The product does not contain impurities or additives that could affect product's labelling and classification according to Regulation (EC) No 1272/2008 (CLP).

### 3.2. Mixtures

Not applicable

## SECTION 4. FIRST-AID MEASURES

### 4.1. Description of first aid measures

#### First-aid measures general

Remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel

should pay attention to their own safety.

#### **First-aid measures after inhalation**

Move any exposed person to fresh air at once. Keep warm and at rest. If there is respiratory distress give oxygen. If respiration stops or shows signs of failing, apply artificial respiration. Get medical attention immediately.

#### **First-aid measures after skin contact**

Remove contaminated clothing and wash skin with plenty of running water, under a shower if affected area is large enough to warrant this. Get medical attention if irritation develops or persists.

#### **First-aid measures after eye contact**

Rinse immediately eye with plenty of low pressure water for at least 15 minutes. Remove any contact lenses. Get medical attention immediately.

#### **First-aid measures after ingestion**

Potential for aspiration if swallowed. Get medical aid immediately. Wash out mouth with water and give plenty of water to drink, provided person is conscious. Do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have the exposed person lean forward.

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

Symptoms/effects after inhalation: Drowsiness, dizziness, headache. Local irritation symptoms. Rhinitis, cough. Nausea, vomiting. Symptoms of intoxication.

Symptoms/effects after skin contact: Dryness, redness.

Symptoms/effects after eye contact: Serious eye damage. Irritation of eyes and mucous membrane. Itchy, lachrymation, redness, pain.

Symptoms/effects after ingestion: Local irritation symptoms. Drowsiness, dizziness, headache. Nausea, vomiting. Symptoms of intoxication.

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

#### **Advice to physician**

Treat according to symptoms (decontamination, vital functions), no known specific antidote.

## **SECTION 5. FIRE-FIGHTING MEASURES**

### **5.1. Extinguishing media**

Suitable extinguishing media Water spray, dry powder, alcohol-resistant foam, carbon dioxide.

Unsuitable extinguishing media Straight streams of water.

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

Fire hazard: Flammable liquid and vapour. Flash back possible over considerable distance. Material is lighter than water and a fire may be spread by the use of water.

Vapour may cause flash fire. Vapours are heavier than air. It may travel along the ground and be ignited at a distant location.

Explosion hazard: The vapour readily mixes with air and explosive mixtures can easily be formed.

Hazardous decomposition products in case of fire: Combustion generates irritating and highly toxic fumes. Carbon monoxide, carbon dioxide.

### **5.3. Advice for firefighters**

Firefighting instructions: In case of fire: Evacuate area. Fight fire remotely due to the risk of

explosion. Keep containers cool by spraying with water if exposed to fire.

Protection during firefighting: Wear full protective clothing and MSHA/NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode. Chemical-protective clothing.

Further information: Foam should be applied in large quantities as it is broken down to some extent by the product. Collect contaminated extinguishing water separately, do not allow to reach sewage or effluent systems.

## SECTION 6. ACCIDENTAL RELEASE MEASURE

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

Emergency procedures Remove sources of ignition. No smoking. Avoid contact with skin and eyes. Avoid inhalation of fumes from molten product. Keep unprotected persons away.

#### 6.1.2. For emergency responders

Emergency procedures Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. For personal protection see section 8.

### 6.2. Environmental precautions

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

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

For large amounts: Pump off product.

For residues: Pick up with suitable absorbent material (e.g. sand, sawdust, general-purpose binder, kieselguhr). Dispose of absorbed material in accordance with local regulations.

### 6.4. Reference to other sections

SECTION 8: Exposure controls/personal protection. SECTION 13: Disposal considerations.

## SECTION 7. HANDLING AND STORAGE

### 7.1. Precautions for safe handling

Precautions for safe handling Use only in a well-ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapour), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Take precautionary measures against static discharges. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Hygiene measures Wash thoroughly after handling. Wash your hands at the end of each work shift, before and after eating, drinking, smoking or using the toilet.

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

Storage conditions Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container.

Incompatible materials Strong oxidizing agents, strong acids, alkali metals, halogens.  
 Storage area Store in a cool, dry, well-ventilated area away from incompatible substances.

### 7.3. Specific end use(s)

Not applicable.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1. Control parameters

#### 8.1.1. Occupational Exposure Limits

##### *Butan-1-ol (CAS No.71-36-3)*

	LTEL TWA ppm	LTEL TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Note
<b>European Union</b>					
Austria	50	150	200	600	
Belgium	20	62			
Denmark	50	150	50	150	
Finland	50	150	75 (1)	230 (1)	(1) 15 minutes average value
France			50	150	
Germany (AGS)	100	310	100 (1)	310 (1)	(1) 15 minutes average value
Germany (DFG)	100	310	100	310	STV 15 minutes average value
Hungary		45		90	
Ireland	20				
Latvia		10			
Poland		50		150	
Romania	33	100	66 (1)	200 (1)	(1) 15 minutes average value
Spain	20	61	50	154	
Sweden	15	45	30 (1)	90 (1)	(1) 15 minutes average value
Switzerland	100	310	100 (1)	310 (1)	(1) 15 minutes average value
United Kingdom			50	154	

#### 8.1.2. DNEL/ PNEC values

##### *Butan-1-ol (CAS No. 71-36-3)*

#### DNEL/DMEL (Workers)

Acute - systemic effects, dermal	No hazard identified
Acute - systemic effects, inhalation	No hazard identified
Acute - local effects, dermal	Low hazard (no threshold derived)
Acute - local effects, inhalation	Low hazard (no threshold derived)
Long-term - systemic effects, dermal	Low hazard (no threshold derived)
Long-term - systemic effects, inhalation	Low hazard (no threshold derived)
Long-term - local effects, dermal	Low hazard (no threshold derived)

Long-term - local effects, inhalation	(DNEL) 310 mg/m <sup>3</sup> . Most sensitive endpoint: irritation (respiratory tract).
Eyes, local effects	Medium hazard (no threshold derived)
<b>DNEL/DMEL (General population)</b>	
Acute - systemic effects, dermal	No hazard identified
Acute - systemic effects, inhalation	No hazard identified
Acute - systemic effects, oral	No hazard identified
Acute - local effects, dermal	Low hazard (no threshold derived)
Acute - local effects, inhalation	Low hazard (no threshold derived)
Long-term - systemic effects, dermal	(DNEL) 3.125 mg/kg bw/day . Most sensitive endpoint: repeated dose toxicity
Long-term - systemic effects, inhalation	(DNEL) 55.357 mg/m <sup>3</sup> . Most sensitive endpoint: irritation (respiratory tract).
Long-term - systemic effects, oral	(DNEL) 1.562 mg/kg bw/day. Most sensitive endpoint: repeated dose toxicity
Long-term - local effects, dermal	Low hazard (no threshold derived)
Long-term - local effects, inhalation	(DNEL) 155 mg/m <sup>3</sup> . Most sensitive endpoint: irritation (respiratory tract).
Eyes, local effects	Medium hazard (no threshold derived)
<b>PNEC (water)</b>	
PNEC aqua (freshwater)	0.082 mg/L
PNEC aqua (marine water)	0.008 mg/L
PNEC aqua (intermittent, freshwater)	2.25 mg/L
<b>PNEC (Sediment)</b>	
PNEC sediment (freshwater)	0.324 mg/kg sediment dw
PNEC sediment (marine water)	0.032 mg/kg sediment dw
<b>PNEC (Soil)</b>	
PNEC soil	0.017 mg/kg soil dw
<b>PNEC (Oral)</b>	
PNEC oral (secondary poisoning)	No potential for bioaccumulation.
<b>PNEC (STP)</b>	
PNEC sewage treatment plant	2476 mg/L

## 8.2. Exposure controls

### Appropriate engineering controls:

Use explosion-proof ventilation equipment. Provide easy access to water supply and eye wash facilities. Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

### Hand protection:

Chemical resistant protective gloves (EN 374). Suitable materials also with prolonged, direct contact (Recommended: Protective index 6, corresponding > 480 minutes of permeation time according to EN 374):

butyl rubber (butyl) - 0.7 mm coating thickness

nitrile rubber (NBR) - 0.4 mm coating thickness

Supplementary note: The specifications are based on tests, literature data and information of glove manufacturers or are derived from similar substances by analogy. Due to many conditions (e.g. temperature) it must be considered, that the practical usage of a chemical-protective glove in

practice may be much shorter than the permeation time determined through testing. Manufacturer's directions for use should be observed because of great diversity of types.

**Eye protection:**

Tightly fitting safety goggles (splash goggles) (e.g. EN 166)

**Skin and body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

**Respiratory protection:**

Wear respiratory protection if ventilation is inadequate. Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A)

**Environmental exposure controls:**

Do not contaminate water sources or sewer.

**Other information:**

Hygiene measures: Observe good industrial hygiene practices. Do not get in eyes. Avoid contact with skin. Wash contaminated clothing before reuse. When using do not smoke. Wash hands before breaks and immediately after handling the product.

*For more information please see the relevant exposure scenario in Annex of this SDS.*

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

**9.1. Information on basic physical and chemical properties**

Physical state at 20 °C and 101.3 kPa	Liquid
Melting / freezing point	< -90 °C
Boiling point	119 °C at 1013.25 hPa
Relative density	0.81 g/cm <sup>3</sup> at 20°C
Vapour pressure	< 10 hPa at 20 °C
Surface tension	69.9 mN/m at 20° C and 1000 mg/L
Water solubility	66 g/L at 20°C
Partition coefficient n-octanol/water (log value)	1.0 at 25 °C
Flash point	35 °C at 1013 hPa
Flammability	Flammability for liquids was derived from flash point. The substance is no flammable gas and solid or emits flammable gases in contact with water. The substance has no self heating and pyrophoric properties.
Explosive properties	Non explosive
Self-ignition temperature	355 °C at 1013 hPa
Oxidising properties	No oxidising properties
Viscosity	2.947 mPa*s at 20° C (dynamic)
Granulometry	Not applicable
Stability in organic solvents and identity of relevant degradation products	Not applicable
Dissociation constant	Not applicable

**9.2. Other information**

Not available.



## SECTION 10. STABILITY AND REACTIVITY

### 10.1. Reactivity

Vapours may form explosive mixture with air. No corrosive effect on metal.  
 Formation of flammable gases: Remarks: Forms no flammable gases in the presence of water.

### 10.2. Chemical stability

The product is stable if stored and handled as prescribed/indicated.

### 10.3. Possibility of hazardous reactions

Reacts with strong oxidizing agents.

### 10.4. Conditions to avoid

Heat, sparks, flames.

### 10.5. Incompatible materials

Strong oxidizing agents

### 10.6. Hazardous decomposition products

No hazardous decomposition products if stored and handled as prescribed/indicated. Thermal decomposition or combustion may generate smoke, carbon monoxide, carbon dioxide, and other products of incomplete combustion.

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1. Information on toxicological effects

**Acute toxicity** CLP classification (Regulation (EC) No 1272/2008):  
 Ingestion: Acute Tox. 4. Harmful if swallowed.

<i>Butan-1-ol (CAS No.71-36-3)</i>	
LD50, oral, rat, female	ca.2292 mg/kg bw (OECD Guideline 401)
LC0, inhalation, rat	>17.76 mg/L air (4h) (OECD Guideline 403)
LD50, dermal, rabbit, male	ca.3430 mg/kg bw (occlusive) (OECD Guideline 402)
Additional information	Butan-1-ol is slightly acute toxic to experimental animals via the oral and dermal routes of exposure; a low acute toxicity was observed after inhalative exposure.

**Skin corrosion/irritation** Adverse effect observed (irritating). CLP classification (Regulation (EC) No 1272/2008): Skin corrosion/irritation: Category 2  
 Additional information Erythema score: 2.7 of max. 4 (mean) (Time point: 24, 48 and 72 hours) (not fully reversible within: 8 days) (superficial necrosis).  
 Edema score: 2 of max. 4 (Time point: 24/48/ 72 hours) Reversibility: not fully reversible within: 8 days (edema extending beyond the area of exposure).

**Serious eye damage/irritation** Adverse effect observed (irritating). CLP classification (Regulation (EC) No 1272/2008): Serious eye damage/eye irritation: Category 1.  
 Additional information Cornea opacity score: (mean) 2.11 of max. 4 (time point: 24/48/72 hours). Not fully reversible within: 7 days.  
 Iris score: (mean) 1 of max. 2 (time point: 24/48/72 hours). Not fully reversible within: 7 days.  
 Conjunctivae score: (mean) 2.89 of max. 3(time point: 24/48/72 hours). Not fully reversible within: 7 days.  
 Chemosis score: (mean) 3 of max. 4 (time point: 24/48/72 hours). Not fully reversible within: 7 days. (Rabbits, OECD Guideline 405)

<b>Respiratory tract irritation</b>	Respiratory irritation: adverse effect observed (irritating)
<b>Respiratory or skin sensitisation</b>	Not sensitizing
Additional information	The results of a LLNA study (in vivo) showed that the test item does not have a sensitizing effect on the skin under the test conditions chosen. Stimulation index: 1 (Test group / Remarks: vehicle water) Stimulation index: 1.6 (Test group / Remarks: 5% (v/v)) Stimulation index: 1.2 (Test group / Remarks: 10% (v/v)) Stimulation index: 1.4 (Test group / Remarks: 20% (v/v)) (Mouse, female, OECD Guideline 429) In addition, the test substance is not peptide reactive and shows no activation of keratinocytes or dendritic cells.
<b>Germ cell mutagenicity</b>	Genetic toxicity: no adverse effect observed (negative). CLP classification (Regulation (EC) No 1272/2008): no classification required.
Additional information	In-vitro studies (bacterial systems): negative. In-vitro studies (Mammalian cell gene mutation test): negative. In-vitro studies (Cytogenicity tests): negative without metabolic activation. In vivo studies (Cytogenicity in mammals) mouse (micronucleus test): negative.
<b>Carcinogenicity</b>	CLP classification (Regulation (EC) No 1272/2008): no classification required.
Additional information	There is at present no evidence for a carcinogenic potential of butan-1-ol. Therefore a carcinogenicity classification is not justified
<b>Toxicity for reproduction</b>	CLP classification (Regulation (EC) No 1272/2008): no classification required.

<i>Butan-1-ol (CAS No. 71-36-3)</i>	
NOAEC (effects on fertility), inhalation, rat	6189 mg/m <sup>3</sup> (subchronic)
NOAEL (effects on fertility), oral, rat	500 mg/kg bw/d (subchronic)
NOAEC (developmental toxicity), inhalation, rat	10800 mg/m <sup>3</sup> (subchronic) (Nelson 1989a, RL 2)
NOAEL (developmental toxicity), oral, rat	1454 mg/kg bw/day (subchronic) (Ema 2005, RL 1)

<b>STOT-single exposure</b>	STOT Single Exposure Cat. 3 (H335: "May causes respiratory irritation"/H336 "May cause drowsiness or dizziness")
<b>Repeated dose toxicity</b>	CLP classification (Regulation (EC) No 1272/2008): Specific Target Organ Toxicity: Repeated Exposure: no classification required.

<i>Butan-1-ol (CAS No. 71-36-3)</i>	
NOEL, subchronic, oral, rat	125 mg/kg bw/day Target organs: Not centered on a specific organ but general effects on neurological and behavioral functions as typically observed for alcohols.
LOEL, subchronic, oral, rat	500 mg/kg bw/day Based on: (test mat.) transient clinical signs of CNS depression (ataxia and hypoactivity)
NOEL (local/systemic) subchronic, inhalation, rat	2.35 mg/L =500 ppm (90 d)

NOAEC (local/systemic), subchronic, inhalation, rat	1500mg/m <sup>3</sup> Target organs: Not centered on a specific organ but general effects on neurological and behavioral functions (drowsiness and dizziness) as typically observed for alcohols as well as local irritation.
<b>Aspiration hazard</b>	Not available.
<b>Other effects</b>	
<b>Neurotoxicity</b>	There is no evidence that Butan-1-ol has to be considered as neurotoxicant or developmental neurotoxicant as it did not lead to adverse and/or persistent damage of the CNS or peripheral nervous system. Exposure of Butan-1-ol led only transiently to minor behavioural effects or impairment of neurological functions (drowsiness and dizziness) which are classified accordingly (STOT SE 3, H336). Those observations typically occur after exposure to alcohols. As a result, the substance is not considered to be classified for neurotoxicity under Regulation (EC) No 1272/2008, as amended for the eighth time in Regulation (EU) No 2016/218.

<i>Butan-1-ol (CAS No. 71-36-3)</i>	
NOEL transient neurological effects, subchronic, oral, rat	125 mg/kg bw/d(ataxia, hypoactivity)
NOAEL(rotarod performance), oral, mice	500 mg/kg bw (explorative screening study, single application)
NOAEC for behavioral effects, inhalation, rat,	6000 ppm (Behavioral peri-, postnatal developmental (neuro)toxicity study)

## SECTION 12. ECOLOGICAL INFORMATION

### 12.1. Toxicity

#### *Butan-1-ol (CAS No.71-36-3)*

#### **Fish (Short-term toxicity)**

LC50 (96h)	1376 mg/L - <i>Pimephales promelas</i> (freshwater)(OECD Guideline 203)
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NOEC (96h)	519 mg/L - <i>Pimephales promelas</i> (freshwater)(OECD Guideline 203)
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#### **Fish (Long-term toxicity)**

Not available

#### **Aquatic invertebrates (Short-term toxicity)**

EC50 (48 h)	1328mg/L - <i>Daphnia Magna</i> (freshwater) (OECD Guideline 202)
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NOEC (48h)	415 mg/L - <i>Daphnia Magna</i> (freshwater) (OECD Guideline 202)
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#### **Aquatic invertebrates (Long-term toxicity)**

NOEC (21 d)	4.1 mg/L - <i>Daphnia magna</i> (freshwater) (OECD Guideline 211)
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#### **Algae and aquatic plants**

EC50/LC50 (96 h)	225mg/L- <i>Pseudokirchneriella subcapitata</i> (freshwater) (OECD Guideline 201)
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EC10/LC10 or NOEC	129mg/L - <i>Pseudokirchneriella subcapitata</i> (freshwater) (OECD Guideline 201)
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#### **Toxicity to aquatic micro-organisms**

EC10 (17h)	2476 mg/L - <i>Pseudomonas putida</i> (freshwater) (DIN 38412, part 8)
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EC50 (17h)	4390 mg/L - <i>Pseudomonas putida</i> (freshwater) (DIN 38412, part 8)
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## 12.2. Persistence and degradability

Abiotic degradation:	<u>Hydrolysis</u> Due to its molecular structure, i.e. absence of hydrolyzable groups, Butan-1-ol exhibits no potential for hydrolysis. <u>Phototransformation in air</u> Half-life (DT50): 46 - 53.5 h
Biodegradation	Readily biodegradable % Degradation of test substance: 68 after 5 d (O <sub>2</sub> consumption) 87 after 10 d (O <sub>2</sub> consumption) 92 after 15 d (O <sub>2</sub> consumption) 92 after 20 d (O <sub>2</sub> consumption)
Persistence and degradability	Butan-1-ol exhibits no potential for hydrolysis/ After evaporation or exposure to the air, Butan-1-ol will be slowly degraded by photochemical processes. Butan-1-ol is readily biodegradable according to OECD criteria.

## 12.3. Environmental distribution

Adsorption soil	Adsorption of Butan-1-ol to solid soil phase is not expected Adsorption coefficient: log K <sub>oc</sub> = 0.54 (QSAR)
Volatilization	From the water surface the substance will not evaporate into the atmosphere. Henry's Law constant H: 0.0539 Pa m <sup>3</sup> /mol at 25 °C (QSAR)

## 12.4. Bioaccumulative potential

Aquatic bioaccumulation:	The measured low log Pow (0.88) and the calculated BCF of 3.16 give no indication for a potential for bioaccumulation (QSAR).
Secondary poisoning:	Based on the available information, there is no indication of a bioaccumulation potential and, hence, secondary poisoning is not considered relevant

## 12.5. Mobility in soil

Biodegradation in soil:	In accordance with column 2 of REACH Annex IX, no simulation tests in soil are required, since Butan-1-ol is readily biodegradable according to OECD criteria.
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## 12.6. Results of PBT and vPvB assessment

Regarding all available data on biotic and abiotic degradation, bioaccumulation and toxicity it can be stated that the substance does not fulfill the PBT criteria (not PBT) and not the vPvB criteria (not vPvB).

## 12.7. Other adverse effects

Not available.

# SECTION 13. DISPOSAL CONSIDERATIONS

## 13.1. Waste treatment methods

Waste disposal recommendations	<u>Waste treatment methods:</u> Must be disposed of or incinerated in accordance with local regulations. <b>DO NOT CUT, DRILL, GRIND, WELD OR PERFORM SIMILAR OPERATIONS ON OR NEAR CONTAINERS EVEN WHEN EMPTY.</b> <u>Contaminated packaging:</u> should be emptied as far as possible; then it can be passed on for recycling after being thoroughly cleaned.
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European List of Waste (LoW) code      Not available.

## SECTION 14. TRANSPORT INFORMATION

### 14.1. Land transport (ADR/ RID)

UN-No.                                    UN1120  
Proper Shipping Name:            n-BUTANOL  
Hazard class:                            3  
Packing group:                        III  
Hazard label:                        Class 3 (flammable)



Classification Code:                F1  
Hazard identification number (HIN):    30  
Tunnel restriction code (ADR)        3(D/E)  
Environmental hazard:                No

### 14.2. Inland waterway transport (ADN)

UN-No.                                    UN1120  
Proper Shipping Name:            n-BUTANOL  
Hazard class:                            3  
Packing group:                        III  
Hazard label:                        Class 3 (flammable)



Classification Code:                F1  
Hazard identification number (HIN):    30  
Environmental hazard:                No

### 14.3. Sea transport (IMDG)

UN-No.                                    UN1120  
Proper Shipping Name:            n-BUTANOL  
Hazard class:                            3  
Packing group:                        PG III  
Hazard label:                        Class 3 (flammable)



EmS-No. (Fire)                        F-E  
EmS-No. (Spillage)                S-D  
Marine pollutant:                        No

### 14.4. Air transport (IATA/ICAO)

UN-No.                                    UN1120  
Proper Shipping Name:            n-BUTANOL  
Hazard class:                            3  
Packing group:                        PG III

Hazard label: Class 3 (flammable)



Environmental hazard: No

#### 14.5. Special precautions for user

Always transport in closed containers. Ensure that persons transporting the product know what to do in the event of an accident or spillage. For information regarding Exposure Controls/Personal Protection see Section 8 of the SDS

#### 14.6. Transport in bulk according to Annex II of Marpol and the IBC Code

Product name: Butyl alcohol  
Ship type: 3  
Pollution category: Z

### SECTION 15. REGULATORY INFORMATION

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

##### 15.1.1. EU-Regulations

Authorisations and/or restrictions on use (Annex XVII): Not applicable.

Butan-1-ol (CAS No. 71-36-3) is not on the REACH Candidate List.

Butan-1-ol (CAS No. 71-36-3) is not on the REACH Annex XIV List.

Substance included in the Community Rolling Action Plan (CoRAP).

Other information, restriction and prohibition regulations Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer, Annex I and Regulation (EC) No. 1005/2009 on substances that deplete the ozone layer. Annex II - Not listed.

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances- (SEVESO III):

Physical Hazard – P5b - Flammable liquids.

Directive 2013/39/EU priority substances in the field of water policy (amending Directive 2006/60/EC – Water Framework Directive and Directive 2008/105/EC on environmental quality standards in the field of water policy): Not listed.

Regulation (EC) No 850/2004 on persistent organic pollutants: Annex III – Not listed.

Regulation (EC) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of dangerous chemicals: Not listed.

##### 15.1.2. National regulations

Not available.

#### 15.2. Chemical safety assessment

Chemical Safety Report has been performed for Butan-1-ol (CAS No. 71-36-3)

### SECTION 16. OTHER INFORMATION

#### 16.1. Indication of changes

Version	Date of change	Section	Description of changes
Version: 1	16/03/2010		Version created according to Regulations (EC) No 1907/2006 (Article 31.1)

Version: 2.1	07/02/2011		Version created according to Regulation (EC) No 1272/2008 (Regulation CLP) & 453/2010
Version: 2.2	07/04/2011	Appendix II	Appendix II was fully updated.
Version: 2.3	11/07/2011	3; 7; 8; 13; 15; 16. Appendix II; III	1. Index No (CLP) for hazard impurities was added to Section 3. 2. Section 8 was fully updated 3. The link to Appendix II was added to Section 7, 8 4. The link to Appendix III was added to Section 13 5. Appendix II was renamed into Appendix III. 6. Appendix II to the eSDS was added. 7. Sections 15, 16 were fully updated
Version: 2.4	26/06/2015	2, 3, 16.1, 16.3	1. Sections 2, 3 were updated. 2. Information from Section 16.3 was transferred to the Section 3.
Version: 3.0	15/01/2019	1-16, Annex	SDS have been corrected in according to new data of Registration dossier, Chemical Safety Report and new Transport information

## 16.2. Abbreviations and acronyms

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS	The German Committee on Hazardous Substances (Ausschuss für Gefahrstoffe – AGS)
BCF	Bioconcentration factor
DFG	Germany Research Foundation
DNEL	Derived No Effect Level
IMDG	International Maritime Dangerous Goods
ICAO-TI	Technical Instructions for the Safe Transport of Dangerous Goods by Air
$K_{oc}$	Adsorption coefficient
$K_{ow}$	octanol-water partition coefficient
LC50	Lethal Concentration to 50 % of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
LOAEC	Lowest Observable Adverse Effect Concentration
LOAEL	Lowest Observable Adverse Effect Level
LOEC	Lowest Observable Effect Concentration
LTEL	Long Term Exposure Limit
NOAEC	No Observed Adverse Effect Concentration
NOAEL	No Observed Adverse Effect Level
NOEC	No Observed Effect Concentration
OECD	Organization for Economic Co-operation and Development
OSHA	Occupational Safety & Health Administration (USA)
PNEC	Predicted No Effect Concentration
PBT	Persistent, bioaccumulative, toxic chemical
vPvB	Very Persistent, Very Bioaccumulative
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SCOEL	Scientific Committee on Occupational Exposure Limits
STEL	Short Term Exposure Limit

STP	sewage treatment plant
STOT	Specific Target Organ Toxicity
(STOT) RE	Repeated Exposure
(STOT) SE	Single Exposure
TWA	Time Weighted Average
UN	United Nations

### 16.3. Full text of H- and EUH-statements:

H226	Flam. Liquid 3	Flammable liquid and vapour.
H302	Acute Tox. 4	Harmful if swallowed
H315	Skin Irrit. 2	Causes skin irritation
H318	Eye Damage 1	Causes serious eye damage.
H335	STOT Single Exp. 3 Affected organs: CNS	May cause respiratory irritation.
H336	STOT Single Exp. 3 Affected organs: CNS	May cause drowsiness or dizziness.

### 16.4. List of ES (exposure scenario) given in Annex to the extended SDS

ES1	Distribution of substance (use in industrial settings)
ES2	Distribution of substance (use in professional settings)
ES3	Formulation (use in industrial settings)
ES4	Formulation (use in professional settings)
ES5	Use in Metal working fluids / rolling oils (industrial)
ES6	Use in Metal working fluids / rolling oils (professional)
ES7	Use as an intermediate (use in industrial settings)
ES8	Use as a Process chemical (use in industrial settings)
ES9	Use in Cleaning Agents (industrial)
ES10	Use in Cleaning Agents (professional)
ES11	Use in Cleaning Agents (consumer)
ES12	Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (industrial)
ES13	Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (professional)
ES14	Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (consumer)
ES15	Use in laboratories (use in industrial settings)
ES16	Use in laboratories (use in professional settings)
ES17	Use in Lubricants (industrial)
ES18	Use in Lubricants (professional)
ES19	Use in Lubricants (consumer)
ES20	Consumer applications

### 16.5. Key literature references and sources

CHEMICAL SAFETY REPORT to Butan-1-ol (CAS 71-36-3)

### EU DIRECTIVES

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC.



Regulation (EC) No 1272/2008 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.

Regulations. Commission regulation (EU) no 2015/830 of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH).

### **Training advice**

Personnel handling the product has to be acquainted demonstrably with its hazardous properties, with health and environmental protection principles related to the product and first aid principles.

### *DISCLAIMER*

*This information is based on our current level of knowledge. This information may be subject to revision as new knowledge and experience becomes available, and SIBUR makes no warranties and assumes no liability in connection with any use of this information. Since SIBUR cannot be aware of all aspects of your business and the impact the REACH Regulation has for your company, SIBUR strongly encourages you to get familiar with the REACH Regulation in order to comply with its requirements and timelines.*

## ANNEX. EXPOSURE SCENARIOS

### Exposure Scenario 1 (ES1): Distribution of substance (use in industrial settings)

<b>Free short title</b>	Distribution of substance
<b>Systematic title based on use descriptor</b>	ERC 2; PROC 8A, 8B, 9
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 2 Formulation of preparations
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)
<b>Contributing Scenario (1) controlling environmental exposure for ERC 2</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 8A</b>	
<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	

Respiratory protection	no
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 8B</b>	
<b>Name of contributing scenario</b>	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 9</b>	
<b>Name of contributing scenario</b>	9 - Transfer of chemicals into small containers (dedicated filling line)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 2 (ES2): Distribution of substance (use in professional settings)

<b>Free short title</b>	Distribution of substance (use in professional settings)
<b>Systematic title based on use descriptor</b>	ERC 2; PROC 8A, 8B, 9
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 2 Formulation of preparations
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)
<b>Contributing Scenario (1) controlling environmental exposure for ERC 2</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling professional worker exposure for PROC 8A</b>	
<b>Name of contributing scenario</b>	8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (3) controlling professional worker exposure for PROC 8B</b>	
<b>Name of contributing scenario</b>	8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities

Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling professional worker exposure for PROC 9</b>	
<b>Name of contributing scenario</b>	9 - Transfer of chemicals into small containers (dedicated filling line)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

### Exposure Scenario 3 (ES3): Formulation (use in industrial settings)

<b>Free short title</b>	Formulation
<b>Systematic title based on use descriptor</b>	ERC 2; PROC 1, 2, 3, 4, 5
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 2 Formulation of preparations
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact)
<b>Contributing Scenario (1) controlling environmental exposure for ERC 2</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 1</b>	
<b>Name of contributing scenario</b>	1 - Use in closed process, no likelihood of exposure
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 2</b>	
Name of contributing scenario	2 - Use in closed, continuous process with occasional controlled exposure
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 3</b>	
Name of contributing scenario	3 - Use in closed batch process (synthesis or formulation)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (5) controlling industrial worker exposure for PROC 4</b>	

<b>Name of contributing scenario</b>	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (6) controlling industrial worker exposure for PROC 5</b>	
<b>Name of contributing scenario</b>	5 - Mixing or blending in batch processes (multistage and/or significant contact)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no



## Exposure Scenario 4 (ES4): Formulation (use in professional settings)

<b>Free short title</b>	Formulation
<b>Systematic title based on use descriptor</b>	ERC 8D, 8A; PROC 19
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8d Wide dispersive outdoor use of processing aids in open systems ERC 8a Wide dispersive indoor use of processing aids in open systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 19 - Hand-mixing with intimate contact (only PPE available)
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8D</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8A</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (3) controlling professional worker exposure for PROC 19</b>	
<b>Name of contributing scenario</b>	19 - Hand-mixing with intimate contact (only PPE available)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,980 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 5 (ES5): Use in Metal working fluids / rolling oils (industrial)

<b>Free short title</b>	Use in Metal working fluids / rolling oils
<b>Systematic title based on use descriptor</b>	ERC 4; PROC 7, 10, 13, 17
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 4 Industrial use of processing aids
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 7 - Industrial spraying PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process
<b>Contributing Scenario (1) controlling environmental exposure for ERC 4</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 7</b>	
<b>Name of contributing scenario</b>	7 - Industrial spraying
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure that a spraying booth is used. Ensure minimization of manual phases. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	

Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 10</b>	
Name of contributing scenario	10 - Roller application or brushing
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	<p>Ensure minimization of manual phases.          Avoid frequent and direct contact with substance.          Supervision in place to check that the RMMs in place are being used correctly and OCs followed.          Avoid splashing.          Wear suitable working clothes.</p>
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment

<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (5) controlling industrial worker exposure for PROC 17</b>	
<b>Name of contributing scenario</b>	17 - Lubrication at high energy conditions and in partly open process
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

### Exposure Scenario 6 (ES6): Use in Metal working fluids / rolling oils (professional)

<b>Free short title</b>	Use in Metal working fluids / rolling oils
<b>Systematic title based on use descriptor</b>	ERC 8A, 8D; PROC 10, 11, 13, 17
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8D</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (3) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling professional worker exposure for PROC 11</b>	
<b>Name of contributing scenario</b>	11 - Non industrial spraying

Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Use a local exhaust ventilation with adequate effectiveness. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): Yes</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume 100-1000 m3</li> <li>- Please characterize type of general ventilation: general ventilation (open windows and doors)</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: Local exhaust ventilation</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration (75th percentile): 220 mg/m3</p>
<b>Contributing Scenario (5) controlling professional worker exposure for PROC 11</b>	
Name of contributing scenario	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines.

	Wear a half mask respirator with type P2L filter or better. Avoid splashing. Wear suitable working clothes. Ensure doors and windows are opened (general ventilation).
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): Yes</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes</li> <li>- Is personal protective equipment applied: Half mask respirator with filter/cartridge (gas cartridge)</li> <li>- Please select the volume of the working room: Volume 100-1000 m3</li> <li>- Please characterize type of general ventilation: general ventilation (open windows and doors)</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration (75th percentile): 167 mg/m3</p>
<b>Contributing Scenario (6) controlling professional worker exposure for PROC 11</b>	
Name of contributing scenario	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.

<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (7) controlling professional worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	



Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (8) controlling professional worker exposure for PROC 17</b>	
<b>Name of contributing scenario</b>	17 - Lubrication at high energy conditions and in partly open process
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

### Exposure Scenario 7 (ES7): Use as an intermediate (use in industrial settings)

<b>Free short title</b>	Use as an intermediate
<b>Systematic title based on use descriptor</b>	ERC 6A; PROC 1, 2, 3, 4
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 6a Industrial use of intermediates
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises
<b>Contributing Scenario (1) controlling environmental exposure for ERC 6A</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 1</b>	
<b>Name of contributing scenario</b>	1 - Use in closed process, no likelihood of exposure
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 2</b>	

<b>Name of contributing scenario</b>	2 - Use in closed, continuous process with occasional controlled exposure
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 3</b>	
<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (5) controlling industrial worker exposure for PROC 4</b>	

<b>Name of contributing scenario</b>	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

### Exposure Scenario 8 (ES8): Use as a Process chemical (use in industrial settings)

<b>Free short title</b>	Use as a Process chemical
<b>Systematic title based on use descriptor</b>	ERC 4; PROC 1, 2, 3, 4
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 4 Industrial use of processing aids
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises
<b>Contributing Scenario (1) controlling environmental exposure for ERC 4</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 1</b>	
<b>Name of contributing scenario</b>	1 - Use in closed process, no likelihood of exposure
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 2</b>	
<b>Name of contributing scenario</b>	2 - Use in closed, continuous process with occasional controlled exposure

Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 3</b>	
<b>Name of contributing scenario</b>	3 - Use in closed batch process (synthesis or formulation)
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (5) controlling industrial worker exposure for PROC 4</b>	

<b>Name of contributing scenario</b>	4 - Use in batch and other process (synthesis) where opportunity for exposure arises
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 9 (ES9): Use in Cleaning Agents (industrial)

<b>Free short title</b>	Use in Cleaning Agents
<b>Systematic title based on use descriptor</b>	ERC 4; PROC 7, 10, 13
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 4 Industrial use of processing aids
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 7 - Industrial spraying PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring
<b>Contributing Scenario (1) controlling environmental exposure for ERC 4</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 7</b>	
<b>Name of contributing scenario</b>	7 - Industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure that a spraying booth is used. Ensure minimization of manual phases. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no



Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 10</b>	
Name of contributing scenario	10 - Roller application or brushing
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	<p>Ensure minimization of manual phases.          Avoid frequent and direct contact with substance.          Supervision in place to check that the RMMs in place are being used correctly and OCs followed.          Avoid splashing.          Wear suitable working clothes.</p>
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	

General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 10 (ES10): Use in Cleaning Agents (professional)

<b>Free short title</b>	Use in Cleaning Agents
<b>Systematic title based on use descriptor</b>	ERC 8D, 8A; PROC 10, 11, 13
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8d Wide dispersive outdoor use of processing aids in open systems ERC 8a Wide dispersive indoor use of processing aids in open systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8D</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8A</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (3) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling professional worker exposure for PROC 11</b>	
<b>Name of contributing scenario</b>	11 - Non industrial spraying

Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Use a local exhaust ventilation with adequate effectiveness. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): Yes</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume 100-1000 m3</li> <li>- Please characterize type of general ventilation: general ventilation (open windows and doors)</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: Local exhaust ventilation</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration (75th percentile): 220 mg/m3</p>
<b>Contributing Scenario (5) controlling professional worker exposure for PROC 11</b>	
Name of contributing scenario	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines.

	Wear a half mask respirator with type P2L filter or better. Avoid splashing. Wear suitable working clothes. Ensure doors and windows are opened (general ventilation).
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): Yes</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes</li> <li>- Is personal protective equipment applied: Half mask respirator with filter/cartridge (gas cartridge)</li> <li>- Please select the volume of the working room: Volume 100-1000 m3</li> <li>- Please characterize type of general ventilation: general ventilation (open windows and doors)</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration (75th percentile): 167 mg/m3</p>
<b>Contributing Scenario (6) controlling professional worker exposure for PROC 11</b>	
Name of contributing scenario	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.

<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (7) controlling professional worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	

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Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 11 (ES11): Use in Cleaning Agents (consumer)

<b>Free short title</b>	Use in Cleaning Agents
<b>Systematic title based on use descriptor</b>	ERC 8D, 8A; PC 4, 9a, 9c, 24, 35
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8d Wide dispersive outdoor use of processing aids in open systems ERC 8a Wide dispersive indoor use of processing aids in open systems
<b>Name(s) of contributing consumer scenarios and corresponding PCs/ACs</b>	PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9c Face and finger paints PC 24 Lubricants, Greases and Release Products PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products) PC 35 Washing and Cleaning Products (including solvent based products)
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8D</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8A</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Contributing Scenario (3) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Glass cleaner - Application: spraying
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	365 per year
Weight fraction non-volatile	5 %
Max. diameter	100 µm
Spray duration	42 sec
Exposure duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
Release duration	42 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	1 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>



Contact rate	46 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Room height	2.5 m
Mass generation rate	0.780 g/s
Airborne fraction	20 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 100 µm, coeff. of variation: 0.600 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (4) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Liquid cleaner - Mixing & Loading
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	104 per year
Exposure time	0.750 min
Application duration	0.300 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	104 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	10 %
Mol weight matrix	22 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	2,000 g
Dermal	0.040 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	215 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	1 m <sup>3</sup>
Ventilation rate	0.500 1/h

Release are is constant	
Release area	20 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (5) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Glass cleaner - Application: cleaning
<b>Frequency and duration of use</b>	
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	1 %
<b>Amounts used</b>	
Dermal	0.290 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	215 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (6) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Spray cleaner - Application: spraying
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	365 per year
Weight fraction non-valotile	5 %
Max. diameter	100 µm
Spray duration	24.6 sec
Exposure duration	60 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
Release duration	24.6 sec
<b>Product characteristics</b>	

Spray application	yes
Product ingredient fraction by weight	50 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	46 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	15 m <sup>3</sup>
Ventilation rate	2.5 1/h
Room height	2.5 m
Mass generation rate	0.780 g/s
Airborne fraction	20 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 100 µm, coeff. of variation: 0.600 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (7) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo Glue remover - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.250 per year
Exposure time	240 min
Application duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.250 per year
Release duration	1.44E4 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	4 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	2,000 g
<b>Human factors not influenced by risk management</b>	

Exposed skin surface (dermal)	230 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	30 m <sup>3</sup>
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	5.00E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (8) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo high solid paint - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	132 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	7,200 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	5 %
Mol weight matrix	550 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	1,300 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	

Release area	1.00E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (9) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo water borne wall paint - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Exposure time	132 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Release duration	7,200 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	2 %
Mol weight matrix	120 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	3,750 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (10) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers

Calculation model	ConsExpo spray can - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Weight fraction non-volatile	30 %
Max. diameter	100 µm
Spray duration	900 sec
Exposure duration	20 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Release duration	900 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	25 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	34 m <sup>3</sup>
Ventilation rate	1.5 1/h
Room height	2.25 m
Mass generation rate	0.330 g/s
Airborne fraction	100 %
Density non-volatile	1.5 %
Droplet distribution	LogNormal, median: 30 µm, coeff. of variation: 0.800 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (11) controlling consumer exposure for PC 9c</b>	
<b>Name of contributing scenario</b>	PC 9c Face and finger paints
Calculation model	Ecetoc TRA
Product subcategory	Finger paints, face paints
<b>Frequency and duration of use</b>	
Frequency of use	365 times/year (Frequent)
<b>Product characteristics</b>	

Product ingredient fraction by weight	1 %
<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	inside hands / one hand / palm of hands
Skin surface area oral	fingers one hand
Transfer factor dermal	100 %
Transfer factor ingestion	50 %
<b>Other given operational conditions affecting consumers exposure</b>	
<b>Contributing Scenario (12) controlling consumer exposure for PC 24</b>	
<b>Name of contributing scenario</b>	PC 24 Lubricants, Greases and Release Products
This scenario has not been calculated. Justification:	Exposure is considered negligible.
<b>Contributing Scenario (13) controlling consumer exposure for PC 35</b>	
<b>Name of contributing scenario</b>	PC 35 Washing and Cleaning Products (including solvent based products)
Calculation model	ConsExpo Bathroom cleaning spray - Application: spraying
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	52 per year
Weight fraction non-volatile	10 %
Max. diameter	100 µm
Spray duration	90 sec
Exposure duration	25 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	52 per year
Release duration	90 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	20 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	46 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	10 m <sup>3</sup>
Ventilation rate	2 l/h
Room height	2.5 m
Mass generation rate	0.390 g/s
Airborne fraction	20 %

Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 100 µm, coeff. of variation: 0.600 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (14) controlling consumer exposure for PC 35</b>	
<b>Name of contributing scenario</b>	PC 35 Washing and Cleaning Products (including solvent based products)
Calculation model	ConsExpo Floor cleaning liquid - Mixing & Loading
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	104 per year
Exposure time	0.750 min
Application duration	0.300 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	104 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	50 %
Mol weight matrix	22 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	500 g
Dermal	0.010 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	215 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	1 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release are is constant	
Release area	20 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (15) controlling consumer exposure for PC 35</b>	
<b>Name of contributing scenario</b>	PC 35 Washing and Cleaning Products (including solvent based products)
Calculation model	ConsExpo Bathroom cleaning spray - Application: cleaning



<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	52 per year
Exposure time	25 min
Application duration	20 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	52 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	36 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	30 g
Dermal	0.300 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	215 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	10 m <sup>3</sup>
Ventilation rate	2 l/h
Release are is constant	
Release area	6.40E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (16) controlling consumer exposure for PC 35</b>	
<b>Name of contributing scenario</b>	PC 35 Washing and Cleaning Products (including solvent based products)
Calculation model	Ecetoc TRA
Product subcategory	Laundry and dish washing products
<b>Frequency and duration of use</b>	
Frequency of use	365 times/year (Frequent)
Exposure time	1 h
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	5 %
<b>Amounts used</b>	
Amounts used	15 g

<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	fingertips
Skin surface area oral	-
Transfer factor dermal	100 %
<b>Other given operational conditions affecting consumers exposure</b>	
Room volume	20 m <sup>3</sup>
Release fraction to air	100.0 %
<b>Contributing Scenario (17) controlling consumer exposure for PC 35</b>	
<b>Name of contributing scenario</b>	PC 35 Washing and Cleaning Products (including solvent based products)
Calculation model	ConsExpo Floor cleaning liquid - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	104 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	104 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	3 %
Mol weight matrix	18 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	880 g
Dermal	19 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	1,900 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release area increases over time	
Release area	2.20E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

## Exposure Scenario 12 (ES12): Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (industrial)

<b>Free short title</b>	Use in Coatings Use in Paints Use in Printing inks Use in Adhesives
<b>Systematic title based on use descriptor</b>	ERC 4; PROC 7, 10, 13
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 4 Industrial use of processing aids
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 7 - Industrial spraying PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring
<b>Contributing Scenario (1) controlling environmental exposure for ERC 4</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 7</b>	
<b>Name of contributing scenario</b>	7 - Industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure that a spraying booth is used. Ensure minimization of manual phases. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	

Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 10</b>	
Name of contributing scenario	10 - Roller application or brushing
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	<p>Ensure minimization of manual phases.          Avoid frequent and direct contact with substance.          Supervision in place to check that the RMMs in place are being used correctly and OCs followed.          Avoid splashing.          Wear suitable working clothes.</p>
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment

<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 13 (ES13): Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (professional)

<b>Free short title</b>	Use in Coatings Use in Paints Use in Printing inks Use in Adhesives
<b>Systematic title based on use descriptor</b>	ERC 8A, 8D; PROC 10, 11, 13
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8D</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (3) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling professional worker exposure for PROC 11</b>	

<b>Name of contributing scenario</b>	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Use a local exhaust ventilation with adequate effectiveness. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): Yes</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume 100-1000 m3</li> <li>- Please characterize type of general ventilation: general ventilation (open windows and doors)</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: Local exhaust ventilation</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration (75th percentile): 220 mg/m3</p>
<b>Contributing Scenario (5) controlling professional worker exposure for PROC 11</b>	
<b>Name of contributing scenario</b>	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are

	being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Wear a half mask respirator with type P2L filter or better. Avoid splashing. Wear suitable working clothes. Ensure doors and windows are opened (general ventilation).
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): Yes</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes</li> <li>- Is personal protective equipment applied: Half mask respirator with filter/cartridge (gas cartridge)</li> <li>- Please select the volume of the working room: Volume 100-1000 m3</li> <li>- Please characterize type of general ventilation: general ventilation (open windows and doors)</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration (75th percentile): 167 mg/m3</p>
<b>Contributing Scenario (6) controlling professional worker exposure for PROC 11</b>	
Name of contributing scenario	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Ensure that a spraying booth is used. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.



Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (7) controlling professional worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional

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<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

### Exposure Scenario 14 (ES14): Use in Coatings, Use in Paints, Use in Printing inks, Use in Adhesives (consumer)

<b>Free short title</b>	Use in Coatings Use in Paints Use in Printing inks Use in Adhesives
<b>Systematic title based on use descriptor</b>	ERC 8A, 8D; PC 1, 4, 9a, 9c, 15, 18, 23, 24, 31
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
<b>Name(s) of contributing consumer scenarios and corresponding PCs/ACs</b>	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 4 Anti-Freeze and De-icing products PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9a Coatings and Paints, thinners, paint removers PC 9c Face and finger paints PC 15 Non-metal-surface treatment products PC 15 Non-metal-surface treatment products PC 15 Non-metal-surface treatment products PC 15 Non-metal-surface treatment products PC 18 Ink and Toners PC 23 Leather tanning, dye, finishing, impregnation and care products PC 23 Leather tanning, dye, finishing, impregnation and care products PC 24 Lubricants, Greases and Release Products PC 31 Polishes and Wax Blends PC 31 Polishes and Wax Blends
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8D</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Contributing Scenario (3) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	ConsExpo Carpet glue - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.250 per year
Exposure time	75 min
Application duration	75 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.250 per year
Release duration	4,500 sec
<b>Product characteristics</b>	

Spray application	no
Product ingredient fraction by weight	2 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	9,000 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	110 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release are is constant	
Release area	4.00E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (4) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	ConsExpo Assembly sealants - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	12 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	390 g
Dermal	0.500 g
<b>Human factors not influenced by risk management</b>	

Exposed skin surface (dermal)	43 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (5) controlling consumer exposure for PC 1</b>	
Name of contributing scenario	PC 1 Adhesives, Sealants
Calculation model	ConsExpo Spray glue - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	12 per year
Weight fraction non-volatile	16 %
Max. diameter	100 µm
Spray duration	169.8 sec
Exposure duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	12 per year
Release duration	169.8 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	30 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Room height	2.5 m
Mass generation rate	1.5 g/s
Airborne fraction	100 %

Density non-volatile	1.3 %
Droplet distribution	LogNormal, median: 40 µm, coeff. of variation: 0.400 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (6) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	Ecetoc TRA
Product subcategory	Glues, hobby use
<b>Frequency and duration of use</b>	
Frequency of use	50 times/year (Occasional)
Exposure time	4 h
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	30 %
<b>Amounts used</b>	
Amounts used	9 g
<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	fingertips
Skin surface area oral	-
Transfer factor dermal	100 %
<b>Other given operational conditions affecting consumers exposure</b>	
Room volume	20 m <sup>3</sup>
Release fraction to air	100.0 %
<b>Contributing Scenario (7) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	Ecetoc TRA
Product subcategory	Glues DIY-use (carpet glue, tile glue, wood parquet glue)
<b>Frequency and duration of use</b>	
Frequency of use	50 times/year (Occasional)
Exposure time	6 h
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	0.200 %
<b>Amounts used</b>	
Amounts used	6,390 g
<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	hands
Skin surface area oral	-
Transfer factor dermal	100 %

<b>Other given operational conditions affecting consumers exposure</b>	
Room volume	20 m <sup>3</sup>
Release fraction to air	100.0 %
<b>Contributing Scenario (8) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Glass cleaner - Application: spraying
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	365 per year
Weight fraction non-volatile	5 %
Max. diameter	100 µm
Spray duration	42 sec
Exposure duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
Release duration	42 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	1 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	46 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Room height	2.5 m
Mass generation rate	0.780 g/s
Airborne fraction	20 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 100 µm, coeff. of variation: 0.600 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (9) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products

Calculation model	ConsExpo Liquid cleaner - Mixing & Loading
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	104 per year
Exposure time	0.750 min
Application duration	0.300 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	104 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	10 %
Mol weight matrix	22 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	2,000 g
Dermal	0.040 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	215 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	1 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release are is constant	
Release area	20 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (10) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Glass cleaner - Application: cleaning
<b>Frequency and duration of use</b>	
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
<b>Product characteristics</b>	
Spray application	no



Product ingredient fraction by weight	1 %
<b>Amounts used</b>	
Dermal	0.290 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	215 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (11) controlling consumer exposure for PC 4</b>	
<b>Name of contributing scenario</b>	PC 4 Anti-Freeze and De-icing products
Calculation model	ConsExpo Spray cleaner - Application: spraying
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	365 per year
Weight fraction non-volatile	5 %
Max. diameter	100 µm
Spray duration	24.6 sec
Exposure duration	60 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
Release duration	24.6 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	50 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	46 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	15 m <sup>3</sup>
Ventilation rate	2.5 1/h
Room height	2.5 m
Mass generation rate	0.780 g/s
Airborne fraction	20 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 100 µm, coeff. of variation: 0.600 µm, cut-off diameter:

	15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (12) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo Glue remover - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.250 per year
Exposure time	240 min
Application duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.250 per year
Release duration	1.44E4 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	4 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	2,000 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	230 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	30 m <sup>3</sup>
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	5.00E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (13) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo high solid paint - Application

<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	132 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	7,200 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	5 %
Mol weight matrix	550 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	1,300 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.00E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (14) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo water borne wall paint - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Exposure time	132 min
Application duration	120 min
Dermal	

Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Release duration	7,200 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	2 %
Mol weight matrix	120 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	3,750 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (15) controlling consumer exposure for PC 9a</b>	
<b>Name of contributing scenario</b>	PC 9a Coatings and Paints, thinners, paint removers
Calculation model	ConsExpo spray can - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Weight fraction non-volatile	30 %
Max. diameter	100 µm
Spray duration	900 sec
Exposure duration	20 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Release duration	900 sec
<b>Product characteristics</b>	
Spray application	yes

Product ingredient fraction by weight	25 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	34 m <sup>3</sup>
Ventilation rate	1.5 1/h
Room height	2.25 m
Mass generation rate	0.330 g/s
Airborne fraction	100 %
Density non-volatile	1.5 %
Droplet distribution	LogNormal, median: 30 µm, coeff. of variation: 0.800 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (16) controlling consumer exposure for PC 9c</b>	
<b>Name of contributing scenario</b>	PC 9c Face and finger paints
Calculation model	Ecetoc TRA
Product subcategory	Finger paints, face paints
<b>Frequency and duration of use</b>	
Frequency of use	365 times/year (Frequent)
<b>Product characteristics</b>	
Product ingredient fraction by weight	1 %
<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	inside hands / one hand / palm of hands
Skin surface area oral	fingers one hand
Transfer factor dermal	100 %
Transfer factor ingestion	50 %
<b>Other given operational conditions affecting consumers exposure</b>	
<b>Contributing Scenario (17) controlling consumer exposure for PC 15</b>	
<b>Name of contributing scenario</b>	PC 15 Non-metal-surface treatment products
Calculation model	ConsExpo Glue remover - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.250 per year
Exposure time	240 min

Application duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.250 per year
Release duration	1.44E4 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	4 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	2,000 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	230 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	30 m <sup>3</sup>
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	5.00E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (18) controlling consumer exposure for PC 15</b>	
<b>Name of contributing scenario</b>	PC 15 Non-metal-surface treatment products
Calculation model	ConsExpo high solid paint - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	132 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	7,200 sec
<b>Product characteristics</b>	
Spray application	no

Product ingredient fraction by weight	5 %
Mol weight matrix	550 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	1,300 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 l/h
Release area increases over time	
Release area	1.00E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (19) controlling consumer exposure for PC 15</b>	
<b>Name of contributing scenario</b>	PC 15 Non-metal-surface treatment products
Calculation model	ConsExpo water borne wall paint - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Exposure time	132 min
Application duration	120 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Release duration	7,200 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	2 %
Mol weight matrix	120 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	3,750 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>

Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (20) controlling consumer exposure for PC 15</b>	
Name of contributing scenario	PC 15 Non-metal-surface treatment products
Calculation model	ConsExpo spray can - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	2 per year
Weight fraction non-volatile	30 %
Max. diameter	100 µm
Spray duration	900 sec
Exposure duration	20 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	2 per year
Release duration	900 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	25 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	34 m <sup>3</sup>
Ventilation rate	1.5 1/h
Room height	2.25 m
Mass generation rate	0.330 g/s
Airborne fraction	100 %



Density non-volatile	1.5 %
Droplet distribution	LogNormal, median: 30 µm, coeff. of variation: 0.800 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (21) controlling consumer exposure for PC 18</b>	
<b>Name of contributing scenario</b>	PC 18 Ink and Toners
Calculation model	ConsExpo pneumatic spraying - application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	365 per year
Weight fraction non-volatile	50 %
Max. diameter	100 µm
Spray duration	798 sec
Exposure duration	25 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	365 per year
Release duration	798 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	4 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	110 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	34 m <sup>3</sup>
Ventilation rate	1.5 1/h
Room height	2.25 m
Mass generation rate	0.500 g/s
Airborne fraction	20 %
Density non-volatile	1.5 %
Droplet distribution	LogNormal, median: 50 µm, coeff. of variation: 0.600 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (22) controlling consumer exposure for PC 23</b>	

<b>Name of contributing scenario</b>	PC 23 Leather tanning, dye, finishing, impregnation and care products
Calculation model	ConsExpo Furniture leather spray - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Weight fraction non-volatile	10 %
Max. diameter	100 µm
Spray duration	180 sec
Exposure duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	180 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	50 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Room height	2.5 m
Mass generation rate	0.750 g/s
Airborne fraction	100 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 25 µm, coeff. of variation: 0.400 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (23) controlling consumer exposure for PC 23</b>	
<b>Name of contributing scenario</b>	PC 23 Leather tanning, dye, finishing, impregnation and care products
Calculation model	ConsExpo Furniture polish - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly

Frequency of use	1 per year
Exposure time	240 min
Application duration	90 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	272 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	550 g
Dermal	5.5 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release area increases over time	
Release area	2.20E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (24) controlling consumer exposure for PC 24</b>	
<b>Name of contributing scenario</b>	PC 24 Lubricants, Greases and Release Products
This scenario has not been calculated. Justification:	Exposure is considered negligible.
<b>Contributing Scenario (25) controlling consumer exposure for PC 31</b>	
<b>Name of contributing scenario</b>	PC 31 Polishes and Wax Blends
Calculation model	ConsExpo Furniture leather spray - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Weight fraction non-valotile	10 %
Max. diameter	100 µm
Spray duration	180 sec
Exposure duration	240 min

Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	180 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	50 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Room height	2.5 m
Mass generation rate	0.750 g/s
Airborne fraction	100 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 25 µm, coeff. of variation: 0.400 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (26) controlling consumer exposure for PC 31</b>	
<b>Name of contributing scenario</b>	PC 31 Polishes and Wax Blends
Calculation model	ConsExpo Furniture polish - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	240 min
Application duration	90 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	272 g/mol

Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	550 g
Dermal	5.5 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release area increases over time	
Release area	2.20E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

## Exposure Scenario 15 (ES15): Use in laboratories (use in industrial settings)

<b>Free short title</b>	Use in laboratories
<b>Systematic title based on use descriptor</b>	ERC 4; PROC 15
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 4 Industrial use of processing aids
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 15 - Use of laboratory reagents in small scale laboratories
<b>Contributing Scenario (1) controlling environmental exposure for ERC 4</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Contributing Scenario (2) controlling industrial worker exposure for PROC 15</b>	
<b>Name of contributing scenario</b>	15 - Use of laboratory reagents in small scale laboratories
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

### Exposure Scenario 16 (ES16): Use in laboratories (use in professional settings)

<b>Free short title</b>	Use in laboratories
<b>Systematic title based on use descriptor</b>	ERC 8A; PROC 15
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 15 - Use of laboratory reagents in small scale laboratories
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Contributing Scenario (2) controlling professional worker exposure for PROC 15</b>	
<b>Name of contributing scenario</b>	15 - Use of laboratory reagents in small scale laboratories
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	240 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 17 (ES17): Use in Lubricants (industrial)

<b>Free short title</b>	Use in Lubricants
<b>Systematic title based on use descriptor</b>	ERC 4, 7; PROC 7, 10, 13, 17, 18
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 4 Industrial use of processing aids ERC 7 Industrial use of substances in closed systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 7 - Industrial spraying PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process PROC 18 - Greasing at high energy conditions
<b>Contributing Scenario (1) controlling environmental exposure for ERC 4</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 7</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (3) controlling industrial worker exposure for PROC 7</b>	
<b>Name of contributing scenario</b>	7 - Industrial spraying
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure that a spraying booth is used. Ensure minimization of manual phases. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m). Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	



Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (4) controlling industrial worker exposure for PROC 10</b>	
Name of contributing scenario	10 - Roller application or brushing
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	<p>Ensure minimization of manual phases.          Avoid frequent and direct contact with substance.          Supervision in place to check that the RMMs in place are being used correctly and OCs followed.          Avoid splashing.          Wear suitable working clothes.</p>
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (5) controlling industrial worker exposure for PROC 13</b>	
Name of contributing scenario	13 - Treatment of articles by dipping and pouring
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment

<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (6) controlling industrial worker exposure for PROC 17</b>	
<b>Name of contributing scenario</b>	17 - Lubrication at high energy conditions and in partly open process
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (7) controlling industrial worker exposure for PROC 18</b>	
<b>Name of contributing scenario</b>	18 - Greasing at high energy conditions
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment

<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	industrial
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 18 (ES18): Use in Lubricants (professional)

<b>Free short title</b>	Use in Lubricants
<b>Systematic title based on use descriptor</b>	ERC 8A, 8D; PROC 10, 11, 13, 17, 18, 20
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
<b>Name(s) of contributing worker scenarios and corresponding PROCs</b>	PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring PROC 17 - Lubrication at high energy conditions and in partly open process PROC 18 - Greasing at high energy conditions PROC 20 - Heat and pressure transfer fluids (closed systems) in dispersive use
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8D</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Product characteristics</b>	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	medium
<b>Frequency and duration of use</b>	
Duration of activity	>4 hours (default)
Frequency of use	5 days / week
<b>Contributing Scenario (3) controlling professional worker exposure for PROC 10</b>	
<b>Name of contributing scenario</b>	10 - Roller application or brushing
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)

<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (4) controlling professional worker exposure for PROC 11</b>	
<b>Name of contributing scenario</b>	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Ensure doors and windows are opened (general ventilation). Use a local exhaust ventilation with adequate effectiveness. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	Calculation was done using Stoffenmanager6 with the following settings: - Substance at 100 % purity - Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze - Duration of the task in minutes: 480 min - Frequency task: 4-5 days a week - Is the task being carried out in the breathing zone of an employee (distance head-product <1m): Yes - Is there more than one employee carrying out the same task simultaneously: Yes - Is the task followed by a period of evaporation, drying or curing: Yes - Is personal protective equipment applied: No respiratory protection - Please select the volume of the working room: Volume 100-1000 m3 - Please characterize type of general ventilation: general ventilation (open windows and doors) - Is the working room being cleaned daily: Yes - Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes - Please select available control measures: Local exhaust ventilation - Is the employee situated in a cabin? No Result: Daily concentration (75th percentile): 220 mg/m3
<b>Contributing Scenario (5) controlling professional worker exposure for PROC 11</b>	

<b>Name of contributing scenario</b>	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Clean equipment and the work area every day. Regular inspection and maintenance of equipment and machines. Wear a half mask respirator with type P2L filter or better Avoid splashing. Wear suitable working clothes. Ensure doors and windows are opened (general ventilation).
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	Calculation was done using Stoffenmanager6 with the following settings: - Substance at 100 % purity - Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze - Duration of the task in minutes: 480 min - Frequency task: 4-5 days a week - Is the task being carried out in the breathing zone of an employee (distance head-product <1m): Yes - Is there more than one employee carrying out the same task simultaneously: Yes - Is the task followed by a period of evaporation, drying or curing: Yes - Is personal protective equipment applied: Half mask respirator with filter/cartridge (gas cartridge) - Please select the volume of the working room: Volume 100-1000 m3 - Please characterize type of general ventilation: general ventilation (open windows and doors) - Is the working room being cleaned daily: Yes - Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes - Please select available control measures: No control measures at the source - Is the employee situated in a cabin? No Result: Daily concentration (75th percentile): 167 mg/m3
<b>Contributing Scenario (6) controlling professional worker exposure for PROC 11</b>	
<b>Name of contributing scenario</b>	11 - Non industrial spraying
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment

<b>Qualitative Risk Assessment</b>	
General	<p>Ensure minimization of manual phases.            Avoid frequent and direct contact with substance.            Supervision in place to check that the RMMs in place are being used correctly and OCs followed.            Ensure that a spraying booth is used.            Clean equipment and the work area every day.            Regular inspection and maintenance of equipment and machines.            Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).            Avoid splashing.            Wear suitable working clothes.</p>
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	1,500 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
Use of external/measured value inhalation	<p>Calculation was done using Stoffenmanager6 with the following settings:</p> <ul style="list-style-type: none"> <li>- Substance at 100 % purity</li> <li>- Type of task: Handlings of liquids at high pressure resulting in substantial generation of mist or spray/haze</li> <li>- Duration of the task in minutes: 480 min</li> <li>- Frequency task: 4-5 days a week</li> <li>- Is the task being carried out in the breathing zone of an employee (distance head-product &lt;1m): No</li> <li>- Is there more than one employee carrying out the same task simultaneously: Yes or No possible</li> <li>- Is the task followed by a period of evaporation, drying or curing: Yes or No possible</li> <li>- Is personal protective equipment applied: No respiratory protection</li> <li>- Please select the volume of the working room: Volume &lt; 100 m3, 100-1000 m3 and &gt; 1000 m3 possible</li> <li>- Please characterize type of general ventilation: Spraying booth</li> <li>- Is the working room being cleaned daily: Yes</li> <li>- Are inspections and maintenance of machines/ancillary equipment being done at least monthly to ensure good condition and proper functioning and performance: Yes</li> <li>- Please select available control measures: No control measures at the source</li> <li>- Is the employee situated in a cabin? No</li> </ul> <p>Result: Daily concentration: 0 mg/m3</p>
<b>Contributing Scenario (7) controlling professional worker exposure for PROC 13</b>	
<b>Name of contributing scenario</b>	13 - Treatment of articles by dipping and pouring
<b>Exposure type</b>	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases.

	Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (8) controlling professional worker exposure for PROC 17</b>	
<b>Name of contributing scenario</b>	17 - Lubrication at high energy conditions and in partly open process
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (9) controlling professional worker exposure for PROC 18</b>	
<b>Name of contributing scenario</b>	18 - Greasing at high energy conditions
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases.



	Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	960 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	yes (inhalation 80 %)
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no
<b>Contributing Scenario (10) controlling professional worker exposure for PROC 20</b>	
<b>Name of contributing scenario</b>	20 - Heat and pressure transfer fluids (closed systems) in dispersive use
Exposure type	Inhalation: Long-term local Dermal: Qualitative Risk Assessment
<b>Qualitative Risk Assessment</b>	
General	Ensure minimization of manual phases. Avoid frequent and direct contact with substance. Supervision in place to check that the RMMs in place are being used correctly and OCs followed. Avoid splashing. Wear suitable working clothes.
Eyes	Use suitable eye protection.
Dermal	Use suitable chemically resistant gloves.
<b>Human factors not influenced by risk management</b>	
Exposed skin surface	480 cm <sup>2</sup>
<b>Other given operational conditions affecting workers exposure</b>	
Location	indoors
Domain	professional
<b>Technical conditions and measures to control dispersion and exposure</b>	
Local exhaust ventilation	no
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Respiratory protection	no

## Exposure Scenario 19 (ES 19): Use in Lubricants (consumer)

<b>Free short title</b>	Use in Lubricants
<b>Systematic title based on use descriptor</b>	ERC 8A, 8D; PC 1, 24, 31
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
<b>Name(s) of contributing consumer scenarios and corresponding PCs/ACs</b>	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 24 Lubricants, Greases and Release Products PC 31 Polishes and Wax Blends PC 31 Polishes and Wax Blends
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8D</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Contributing Scenario (3) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	ConsExpo Carpet glue - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	0.250 per year
Exposure time	75 min
Application duration	75 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	0.250 per year
Release duration	4,500 sec
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	2 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	9,000 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	110 cm <sup>2</sup>
Contact rate	30 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	

Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release are is constant	
Release area	4.00E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (4) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	ConsExpo Assembly sealants - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	240 min
Application duration	30 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	12 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	390 g
Dermal	0.500 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	43 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E4 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (5) controlling consumer exposure for PC 1</b>	

<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	ConsExpo Spray glue - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	12 per year
Weight fraction non-volatile	16 %
Max. diameter	100 µm
Spray duration	169.8 sec
Exposure duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	12 per year
Release duration	169.8 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	30 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	20 m <sup>3</sup>
Ventilation rate	0.600 1/h
Room height	2.5 m
Mass generation rate	1.5 g/s
Airborne fraction	100 %
Density non-volatile	1.3 %
Droplet distribution	LogNormal, median: 40 µm, coeff. of variation: 0.400 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (6) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	Ecetoc TRA
Product subcategory	Glues, hobby use
<b>Frequency and duration of use</b>	
Frequency of use	50 times/year (Occasional)

Exposure time	4 h
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	30 %
<b>Amounts used</b>	
Amounts used	9 g
<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	fingertips
Skin surface area oral	-
Transfer factor dermal	100 %
<b>Other given operational conditions affecting consumers exposure</b>	
Room volume	20 m <sup>3</sup>
Release fraction to air	100.0 %
<b>Contributing Scenario (7) controlling consumer exposure for PC 1</b>	
<b>Name of contributing scenario</b>	PC 1 Adhesives, Sealants
Calculation model	Ecetoc TRA
Product subcategory	Glues DIY-use (carpet glue, tile glue, wood parquet glue)
<b>Frequency and duration of use</b>	
Frequency of use	50 times/year (Occasional)
Exposure time	6 h
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	0.200 %
<b>Amounts used</b>	
Amounts used	6,390 g
<b>Human factors not influenced by risk management</b>	
Skin surface area dermal	hands
Skin surface area oral	-
Transfer factor dermal	100 %
<b>Other given operational conditions affecting consumers exposure</b>	
Room volume	20 m <sup>3</sup>
Release fraction to air	100.0 %
<b>Contributing Scenario (8) controlling consumer exposure for PC 24</b>	
<b>Name of contributing scenario</b>	PC 24 Lubricants, Greases and Release Products
This scenario has not been calculated. Justification:	Exposure is considered negligible.
<b>Contributing Scenario (9) controlling consumer exposure for PC 31</b>	
<b>Name of contributing scenario</b>	PC 31 Polishes and Wax Blends
Calculation model	ConsExpo Furniture leather spray - Application
<b>Frequency and duration of use</b>	

Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Weight fraction non-volatile	10 %
Max. diameter	100 µm
Spray duration	180 sec
Exposure duration	240 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	180 sec
<b>Product characteristics</b>	
Spray application	yes
Product ingredient fraction by weight	50 %
<b>Amounts used</b>	
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
Contact rate	100 mg/min
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Room height	2.5 m
Mass generation rate	0.750 g/s
Airborne fraction	100 %
Density non-volatile	1.8 %
Droplet distribution	LogNormal, median: 25 µm, coeff. of variation: 0.400 µm, cut-off diameter: 15 µm
Dermal	
Uptake fraction	100 %
<b>Contributing Scenario (10) controlling consumer exposure for PC 31</b>	
<b>Name of contributing scenario</b>	PC 31 Polishes and Wax Blends
Calculation model	ConsExpo Furniture polish - Application
<b>Frequency and duration of use</b>	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	240 min
Application duration	90 min

Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
<b>Product characteristics</b>	
Spray application	no
Product ingredient fraction by weight	20 %
Mol weight matrix	272 g/mol
Mass transfer rate	- m/min
<b>Amounts used</b>	
Inhalation	550 g
Dermal	5.5 g
<b>Human factors not influenced by risk management</b>	
Exposed skin surface (dermal)	430 cm <sup>2</sup>
<b>Other given operational conditions affecting consumers exposure</b>	
Inhalation	
Room volume	58 m <sup>3</sup>
Ventilation rate	0.500 1/h
Release area increases over time	
Release area	2.20E5 cm <sup>2</sup>
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

## Exposure Scenario 20: Consumer applications

<b>Free short title</b>	Consumer applications
<b>Systematic title based on use descriptor</b>	ERC 8A, 8D; PC 28, 39
<b>Name of contributing environmental scenario and corresponding ERC</b>	ERC 8a Wide dispersive indoor use of processing aids in open systems ERC 8d Wide dispersive outdoor use of processing aids in open systems
<b>Name(s) of contributing consumer scenarios and corresponding PCs/ACs</b>	PC 28 Perfumes, Fragrances PC 39 Cosmetics
<b>Contributing Scenario (1) controlling environmental exposure for ERC 8A</b>	
<b>Contributing Scenario (2) controlling environmental exposure for ERC 8D</b>	
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.	
<b>Contributing Scenario (3) controlling consumer exposure for PC 28</b>	
<b>Name of contributing scenario</b>	PC 28 Perfumes, Fragrances
This scenario has not been calculated. Justification:	In accordance to the Article 14 (5b) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.
<b>Contributing Scenario (4) controlling consumer exposure for PC 39</b>	
<b>Name of contributing scenario</b>	PC 39 Cosmetics
This scenario has not been calculated. Justification:	In accordance to the Article 14 (5b) of the REACH Regulation (EC) No 1907/2006, exposure estimation and risk characterisation needs not to be performed for end uses in cosmetic products within the scope of Directive 76/768/EEC.

**END OF SAFETY DATA SHEET**