

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by  
Commission Regulation (EU) 2020/878



## PURABYK-R 5531

Version: 5.1  
SDB\_LI

Revision Date: 19.06.2026

Date of last issue: 15.01.2025  
Print Date: 23.06.2026

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

#### 1.1 Product identifier

Trade name : PURABYK-R 5531  
UFI : C17A-G0PH-Y00F-XH9W  
Product code : 000000000000121785

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

Use of the Substance/Mixture : Rheology Additive

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

Company : BYK-Chemie GmbH  
Abelstrasse 45  
46483 Wesel  
Telephone : +49 281 670-0  
Telefax : +49 281 65735  
  
Information : Regulatory Affairs  
Telephone : +49 281 670-23532  
Telefax : +49 281 670-23533  
E-mail address : GHS.BYK@altana.com

#### 1.4 Emergency telephone number

Europe +44 1235 239670  
Middle East/Africa +44 1235 239671  
Americas +1 215 207 0061  
East/South East Asia +65 3158 1074  
(Local India: 000 800 100 7479)

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

##### Classification (REGULATION (EC) No 1272/2008)

Skin sensitisation, Category 1 H317: May cause an allergic skin reaction.

#### 2.2 Label elements

##### Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



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Signal word	:	Warning
Hazard statements	:	H317 May cause an allergic skin reaction.
Precautionary statements	:	<b>Prevention:</b> P261 Avoid breathing mist or vapours. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves. <b>Response:</b> P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention. P362 + P364 Take off contaminated clothing and wash it before reuse. <b>Disposal:</b> P501 Dispose of contents/ container to an approved waste disposal plant.

### Hazardous components which must be listed on the label:

- 4394-85-8 4-morpholinecarbaldehyde

### 2.3 Other hazards

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

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Chemical nature : Solution of a modified urea

#### Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
4-morpholinecarbaldehyde	4394-85-8 224-518-3 01-2119987993-12	Skin Sens. 1B; H317	>= 50 - <= 100
lithium chloride	7447-41-8	Acute Tox. 4; H302	>= 1 - < 3

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	231-212-3 01-2119560574-35	Skin Irrit. 2; H315 Eye Irrit. 2; H319	
		Acute toxicity estimate	
		Acute oral toxicity: 526 mg/kg	

For explanation of abbreviations see section 16.

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

- General advice : Move out of dangerous area.  
Show this safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water.
- In case of eye contact : Flush eyes with water as a precaution.  
Remove contact lenses.  
Protect unharmed eye.  
Keep eye wide open while rinsing.  
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.  
Do not give milk or alcoholic beverages.  
Never give anything by mouth to an unconscious person.  
If symptoms persist, call a physician.

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

- Symptoms : No information available.
- Risks : May cause an allergic skin reaction.

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

- Treatment : No information available.

### SECTION 5: Firefighting measures

#### 5.1 Extinguishing media

- Suitable extinguishing media : Foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

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Unsuitable extinguishing media : High volume water jet

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

Hazardous combustion products : Carbon oxides  
Nitrogen oxides (NO<sub>x</sub>)  
Halogenated compounds  
Metal oxides  
Hydrogen chloride  
Hydrogen cyanide (hydrocyanic acid)

### 5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Standard procedure for chemical fires.  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

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## SECTION 6: Accidental release measures

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

Personal precautions : Use personal protective equipment.

### 6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.

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

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).  
Keep in suitable, closed containers for disposal.

### 6.4 Reference to other sections

For disposal considerations see section 13., For personal protection see section 8.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

Advice on safe handling : Do not breathe vapours/dust.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
Dispose of rinse water in accordance with local and national regulations.

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Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Hygiene measures : Wash hands before breaks and at the end of workday.

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

Requirements for storage areas and containers : Keep container tightly closed in a dry and well-ventilated place. Electrical installations / working materials must comply with the technological safety standards.

Further information on storage stability : No decomposition if stored and applied as directed.

### 7.3 Specific end use(s)

Specific use(s) : No data available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Occupational Exposure Limits

Contains no substances with occupational exposure limit values.

#### Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006

Substance name	End Use	Exposure routes	Potential health effects	Value
4-morpholinecarbaldehyde	Workers	Skin contact	Long-term local effects	0,293 mg/cm <sup>2</sup>
	Workers	Inhalation	Long-term systemic effects	98 mg/m <sup>3</sup>
	Consumers	Skin contact	Long-term systemic effects	8 mg/kg
	Consumers	Inhalation	Long-term systemic effects	29 mg/m <sup>3</sup>
lithium chloride	Consumers	Ingestion	Long-term systemic effects	8 mg/kg
	Workers	Inhalation	Acute systemic effects	1,2 mg/m <sup>3</sup>
	Workers	Skin contact	Long-term systemic effects	9,9 mg/kg
	Workers	Inhalation	Long-term systemic effects	1,2 mg/m <sup>3</sup>
	Consumers	Inhalation	Long-term systemic effects	0,6 mg/m <sup>3</sup>
	Consumers	Skin contact	Long-term systemic effects	4,25 mg/kg
	Consumers	Ingestion	Long-term systemic	0,43 mg/kg

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			effects	
	Consumers	Inhalation	Acute systemic effects	0,6 mg/m3
	Consumers	Ingestion	Acute systemic effects	1,29 mg/kg
	Consumers	Inhalation	Long-term local effects	0,6 mg/m3

### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006

Substance name	Environmental Compartment	Value
4-morpholinecarbaldehyde	Fresh water	0,5 mg/l
	Marine water	0,05 mg/l
	Intermittent releases	5 mg/l
	Sewage treatment plant	2000 mg/l
	Fresh water sediment	1,85 mg/kg
	Marine sediment	0,0764 mg/kg
lithium chloride	Fresh water	2175 mg/l
	Fresh water sediment	56,54 mg/kg
	Marine water	217 mg/l
	Marine sediment	5,654 mg/kg
	Soil	10,44 mg/kg
	Sewage treatment plant	1,402 mg/l

## 8.2 Exposure controls

### Personal protective equipment

Eye/face protection : Eye wash bottle with pure water  
Tightly fitting safety goggles

Hand protection

Material : Nitrile rubber  
Break through time : > 480 min

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

### Environmental exposure controls

General advice : Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.

## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Physical state : liquid  
Colour : yellow - brown  
Odour : characteristic

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Odour Threshold	:	No data available
Melting point/ range	:	ca. < 0 °C Method: derived
Boiling point/boiling range	:	ca. 244 °C Method: derived
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	126 °C Method: 49 (Pensky-Martens)
Auto-ignition temperature	:	> 200 °C Method: M0062 (Analytics Wesel)
Decomposition temperature	:	No data available
pH	:	6 (20 °C) Concentration: 10 % Method: Universal pH-value indicator
Viscosity		
Viscosity, dynamic	:	ca. 1.024 mPa.s (20 °C) Method: P/K 20°C
Viscosity, kinematic	:	No data available
Solubility(ies)		
Water solubility	:	partly miscible
Solubility in other solvents	:	No data available
Vapour pressure	:	ca. 1 hPa (20 °C) Method: derived
Relative density	:	No data available
Density	:	ca. 1,18 g/cm <sup>3</sup> (20 °C, 1.013 hPa) Method: 4 (20°C oscillating U-tube)
Relative vapour density	:	No data available

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### 9.2 Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No decomposition if stored and applied as directed.

### 10.2 Chemical stability

No decomposition if stored and applied as directed.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : No decomposition if stored and applied as directed.

### 10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

### 10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents  
Acids  
Bases

### 10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

## SECTION 11: Toxicological information

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

#### Acute toxicity

Not classified due to lack of data.

#### Product:

Acute oral toxicity : Acute toxicity estimate: > 2.000 mg/kg  
Method: Calculation method

#### Components:

##### 4-morpholinecarbaldehyde:

Acute oral toxicity : LD50 (Rat): > 7.360 mg/kg

Acute dermal toxicity : LD50 (Rabbit): > 18.400 mg/kg  
Method: OECD Test Guideline 402

##### lithium chloride:

Acute oral toxicity : LD50 (Rat): 526 mg/kg  
GLP: No information available.

Acute inhalation toxicity : LC50 (Rat): > 5,57 mg/l

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Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
GLP: yes

Acute dermal toxicity : LD50 (Rat): > 2.000 mg/kg  
Method: OECD Test Guideline 402  
GLP: yes

### Skin corrosion/irritation

Not classified due to lack of data.

#### Product:

Remarks : May cause skin irritation and/or dermatitis.

### Serious eye damage/eye irritation

Not classified due to lack of data.

#### Product:

Remarks : Vapours may cause irritation to the eyes, respiratory system and the skin.

### Components:

#### **lithium chloride:**

Species : Rabbit  
Method : OECD Test Guideline 405  
Result : Severe eye irritation  
GLP : yes

### Respiratory or skin sensitisation

#### **Skin sensitisation**

May cause an allergic skin reaction.

#### **Respiratory sensitisation**

Not classified due to lack of data.

#### Product:

Remarks : Causes sensitisation.

### Components:

#### **lithium chloride:**

Test Type : Buehler Test  
Exposure routes : Skin contact  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Did not cause sensitisation on laboratory animals.  
GLP : yes

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### **Germ cell mutagenicity**

Not classified due to lack of data.

#### **Product:**

Genotoxicity in vitro : Remarks: No data available

Genotoxicity in vivo : Remarks: No data available

### **Carcinogenicity**

Not classified due to lack of data.

#### **Product:**

Remarks : No data available

### **Reproductive toxicity**

Not classified due to lack of data.

#### **Product:**

Effects on fertility : Remarks: No data available

Effects on foetal development : Remarks: No data available

### **STOT - single exposure**

Not classified due to lack of data.

#### **Product:**

Remarks : No data available

### **STOT - repeated exposure**

Not classified due to lack of data.

#### **Product:**

Remarks : No data available

### **Repeated dose toxicity**

#### **Product:**

Remarks : No data available

### **Aspiration toxicity**

Not classified due to lack of data.

#### **Product:**

No data available

## **11.2 Information on other hazards**

### **Endocrine disrupting properties**

Not classified due to lack of data.

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### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### Further information

### Product:

Remarks : No data available

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## SECTION 12: Ecological information

### 12.1 Toxicity

#### Product:

Toxicity to fish : Remarks: No data available

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

#### Components:

##### **4-morpholinecarbaldehyde:**

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): > 500 mg/l  
Exposure time: 96 h  
Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 500 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Scenedesmus subspicatus): 23.880 mg/l  
Exposure time: 72 h

EC10 (Scenedesmus subspicatus): 17.040 mg/l  
Exposure time: 72 h

##### **lithium chloride:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 158 mg/l  
Exposure time: 96 h  
Test Type: static test  
Method: OECD Test Guideline 203  
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 249 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
GLP: yes

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NOEC (Daphnia magna (Water flea)): 63,4 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : (Desmodesmus subspicatus (green algae)): > 400 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
GLP: yes

### 12.2 Persistence and degradability

#### Product:

Biodegradability : Remarks: No data available

#### Components:

##### **4-morpholinecarbaldehyde:**

Biodegradability : Result: Readily biodegradable.  
Method: OECD Test Guideline 301A  
GLP: yes

### 12.3 Bioaccumulative potential

#### Product:

Bioaccumulation : Remarks: No data available

#### Components:

##### **4-morpholinecarbaldehyde:**

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Exposure time: 56 d  
Bioconcentration factor (BCF): < 1,9  
Method: OECD Test Guideline 305C

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

#### Product:

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

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### 12.6 Endocrine disrupting properties

**Product:**

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

### 12.7 Other adverse effects

**Product:**

Additional ecological information : No data available

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.  
Dispose of as unused product.  
Do not re-use empty containers.

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## SECTION 14: Transport information

### 14.1 UN number or ID number

ADN : Not regulated as a dangerous good  
ADR : Not regulated as a dangerous good  
RID : Not regulated as a dangerous good  
IMDG : Not regulated as a dangerous good  
IATA : Not regulated as a dangerous good

### 14.2 UN proper shipping name

ADN : Not regulated as a dangerous good  
ADR : Not regulated as a dangerous good  
RID : Not regulated as a dangerous good  
IMDG : Not regulated as a dangerous good  
IATA : Not regulated as a dangerous good

### 14.3 Transport hazard class(es)

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**ADR** : Not regulated as a dangerous good  
**RID** : Not regulated as a dangerous good  
**IMDG** : Not regulated as a dangerous good  
**IATA** : Not regulated as a dangerous good

### 14.4 Packing group

**ADN** : Not regulated as a dangerous good  
**ADR** : Not regulated as a dangerous good  
**RID** : Not regulated as a dangerous good  
**IMDG** : Not regulated as a dangerous good  
**IATA (Cargo)** : Not regulated as a dangerous good  
**IATA (Passenger)** : Not regulated as a dangerous good

### 14.5 Environmental hazards

Not regulated as a dangerous good

### 14.6 Special precautions for user

Not applicable

### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

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## SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:  
Number on list 3

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. : Not applicable

### 15.2 Chemical safety assessment

For further information see eSDS.

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### SECTION 16: Other information

Items where relevant changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

#### Full text of H-Statements

H302 : Harmful if swallowed.  
H315 : Causes skin irritation.  
H317 : May cause an allergic skin reaction.  
H319 : Causes serious eye irritation.

#### Full text of other abbreviations

Acute Tox. : Acute toxicity  
Eye Irrit. : Eye irritation  
Skin Irrit. : Skin irritation  
Skin Sens. : Skin sensitisation

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECl - Thailand Existing Chemicals

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Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

### Further information

#### Classification of the mixture:

Skin Sens. 1

H317

#### Classification procedure:

Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by  
Commission Regulation (EU) 2020/878



## PURABYK-R 5531

Version: 5.1  
SDB\_LI

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## Annex: Exposure Scenarios

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### ES 1: Formulation & (re)packing of substances and mixtures; Industrial uses (SU3).

#### 1.1. Title section

<b>Exposure Scenario name</b>	: Formulation & (re)packing of substances and mixtures
<b>Structured Short Title</b>	: Formulation & (re)packing of substances and mixtures; Industrial uses (SU3).

Environment		
<b>CS 1</b>	<b>Formulation into mixture, Use of non-reactive processing aid at industrial site (no inclusion into or onto article), Use of intermediate</b>	<b>ERC2, ERC4, ERC6a</b>
Worker		
<b>CS 2</b>	<b>Use in closed process, no likelihood of exposure</b>	<b>PROC1</b>
<b>CS 3</b>	<b>Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</b>	<b>PROC2</b>
<b>CS 4</b>	<b>Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</b>	<b>PROC3</b>
<b>CS 5</b>	<b>Chemical production where opportunity for exposure arises</b>	<b>PROC4</b>
<b>CS 6</b>	<b>Mixing or blending in batch processes</b>	<b>PROC5</b>
<b>CS 7</b>	<b>Transfer of substance or mixture (charging/discharging) at non dedicated-facilities</b>	<b>PROC8a</b>
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<b>CS 9</b>	<b>Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</b>	<b>PROC9</b>

#### 1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4) / Use of intermediate (ERC6a)

1.2.2. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

<b>Product (article) characteristics</b>
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Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 1.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week

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<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 1.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 480 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use

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**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply**

Clean equipment and the work area every day.

### 1.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 1.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa

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Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 240 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 1.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 240 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	

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Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 1.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 240 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

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### 1.2.9. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 240 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 1.3. Exposure estimation and reference to its source

#### 1.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4) / Use of intermediate (ERC6a)

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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### 1.3.2. Worker exposure: Use in closed process, no likelihood of exposure (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,001 mg/m <sup>3</sup> (EASY TRA v3.6)	0,003
inhalative	systemic	long-term	0,048 mg/m <sup>3</sup> (EASY TRA v3.6)	< 0,001

### 1.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	4,7971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,049

### 1.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	14,39 mg/m <sup>3</sup> (EASY TRA v3.6)	0,147

### 1.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	23,985 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

### 1.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
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dermal	local	long-term	0,2 mg/m <sup>3</sup> (EASY TRA v3.6)	0,683
inhalative	systemic	long-term	14,3913 mg/m <sup>3</sup> (EASY TRA v3.6)	0,147

### 1.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	47,971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,490

### 1.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	23,986 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

### 1.3.9. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	23,986 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

## 1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

<http://www.ecetoc.org/tra>

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### ES 2: Formulation & (re)packing of substances and mixtures; Professional uses (SU22).

#### 2.1. Title section

<b>Exposure Scenario name</b>	: Formulation & (re)packing of substances and mixtures
<b>Structured Short Title</b>	: Formulation & (re)packing of substances and mixtures; Professional uses (SU22).

Environment		
<b>CS 1</b>	<b>Formulation into mixture, Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use leading to inclusion into/onto article (indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor), Widespread use leading to inclusion into/onto article (outdoor)</b>	ERC2, ERC8a, ERC8c, ERC8d, ERC8f
Worker		
<b>CS 2</b>	<b>Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</b>	PROC3
<b>CS 3</b>	<b>Chemical production where opportunity for exposure arises</b>	PROC4
<b>CS 4</b>	<b>Mixing or blending in batch processes</b>	PROC5
<b>CS 5</b>	<b>Transfer of substance or mixture (charging/discharging) at non dedicated-facilities</b>	PROC8a
<b>CS 6</b>	<b>Transfer of substance or mixture (charging/discharging) at dedicated facilities</b>	PROC8b
<b>CS 7</b>	<b>Transfer of substance or mixture into small containers (dedicated filling line, including weighing)</b>	PROC9
<b>CS 8</b>	<b>Manual activities involving hand contact</b>	PROC19

#### 2.2. Conditions of use affecting exposure

**2.2.1. Control of environmental exposure: Formulation into mixture (ERC2) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)**

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### 2.2.2. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 2.2.3. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C

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<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 2.2.4. Control of worker exposure: Mixing or blending in batch processes (PROC5)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 240 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	

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<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 2.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 240 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 2.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

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<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 2.2.7. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 240 min
Use frequency	: 5 days per week

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<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Inhalation - minimum efficiency of 30 %
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 2.2.8. Control of worker exposure: Manual activities involving hand contact (PROC19)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 180 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use

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**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply**

Clean equipment and the work area every day.

### 2.3. Exposure estimation and reference to its source

**2.3.1. Environmental release and exposure: Formulation into mixture (ERC2) / Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)**

#### **Additional information on exposure estimation**

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

**2.3.2. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)**

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	14,3913 mg/m <sup>3</sup> (EASY TRA v3.6)	0,147

**2.3.3. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)**

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	23,986 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

**2.3.4. Worker exposure: Mixing or blending in batch processes (PROC5)**

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,2 mg/m <sup>3</sup> (EASY TRA v3.6)	0,683

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inhalative	systemic	long-term	14,3913 mg/m <sup>3</sup> (EASY TRA v3.6)	0,147
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### 2.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	50,370 mg/m <sup>3</sup> (EASY TRA v3.6)	0,514

### 2.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	47,971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,490

### 2.3.7. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	47,971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,490

### 2.3.8. Worker exposure: Manual activities involving hand contact (PROC19)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,188 mg/m <sup>3</sup> (EASY TRA v3.6)	0,640
inhalative	systemic	long-term	17,989 mg/m <sup>3</sup> (EASY TRA v3.6)	0,184

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### **2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES**

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### ES 3: Processing aid; Industrial uses (SU3).

#### 3.1. Title section

<b>Exposure Scenario name</b>	: Processing aid
<b>Structured Short Title</b>	: Processing aid; Industrial uses (SU3).

Environment		
<b>CS 1</b>	<b>Use of non-reactive processing aid at industrial site (no inclusion into or onto article)</b>	<b>ERC4</b>
Worker		
<b>CS 2</b>	<b>Use in closed process, no likelihood of exposure</b>	<b>PROC1</b>
<b>CS 3</b>	<b>Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</b>	<b>PROC2</b>
<b>CS 4</b>	<b>Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</b>	<b>PROC3</b>
<b>CS 5</b>	<b>Chemical production where opportunity for exposure arises</b>	<b>PROC4</b>

#### 3.2. Conditions of use affecting exposure

**3.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)**

**3.2.2. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)**

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: 480 min
Use frequency	: 5 days per week

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<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 3.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 480 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use

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**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply**

Clean equipment and the work area every day.

### 3.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 3.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	

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Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 3.3. Exposure estimation and reference to its source

#### 3.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

#### 3.3.2. Worker exposure: Use in closed process, no likelihood of exposure (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,001 mg/m <sup>3</sup> (EASY TRA v3.6)	0,003
inhalative	systemic	long-term	0,048 mg/m <sup>3</sup> (EASY TRA v3.6)	< 0,001

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### 3.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	4,7971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,049

### 3.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	14,39 mg/m <sup>3</sup> (EASY TRA v3.6)	0,147

### 3.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	23,985 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

### 3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 4: Use as an intermediate; Industrial uses (SU3).

#### 4.1. Title section

<b>Exposure Scenario name</b>	: Use as an intermediate
<b>Structured Short Title</b>	: Use as an intermediate; Industrial uses (SU3).

Environment		
<b>CS 1</b>	<b>Use of intermediate</b>	ERC6a
Worker		
<b>CS 2</b>	<b>Use in closed process, no likelihood of exposure</b>	PROC1
<b>CS 3</b>	<b>Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions</b>	PROC2
<b>CS 4</b>	<b>Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</b>	PROC3

#### 4.2. Conditions of use affecting exposure

##### 4.2.1. Control of environmental exposure: Use of intermediate (ERC6a)

##### 4.2.2. Control of worker exposure: Use in closed process, no likelihood of exposure (PROC1)

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: 480 min
Use frequency	: 5 days per week
Technical and organisational conditions and measures	

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Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 4.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 480 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>

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Clean equipment and the work area every day.

### 4.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 4.3. Exposure estimation and reference to its source

#### 4.3.1. Environmental release and exposure: Use of intermediate (ERC6a)

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

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### 4.3.2. Worker exposure: Use in closed process, no likelihood of exposure (PROC1)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,001 mg/m <sup>3</sup> (EASY TRA v3.6)	0,003
inhalative	systemic	long-term	0,048 mg/m <sup>3</sup> (EASY TRA v3.6)	< 0,001

### 4.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	4,7971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,049

### 4.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	14,39 mg/m <sup>3</sup> (EASY TRA v3.6)	0,147

## 4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 5: Use in laboratories; Industrial uses (SU3).

#### 5.1. Title section

<b>Exposure Scenario name</b>	: Use in laboratories
<b>Structured Short Title</b>	: Use in laboratories; Industrial uses (SU3).

<b>Environment</b>	
<b>CS 1</b>	<b>Use of non-reactive processing aid at industrial site (no inclusion into or ERC4 onto article)</b>
<b>Worker</b>	
<b>CS 2</b>	<b>Use as laboratory reagent</b> PROC15

#### 5.2. Conditions of use affecting exposure

**5.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)**

**5.2.2. Control of worker exposure: Use as laboratory reagent (PROC15)**

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	

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Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 5.3. Exposure estimation and reference to its source

#### 5.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

#### 5.3.2. Worker exposure: Use as laboratory reagent (PROC15)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,01 mg/m <sup>3</sup> (EASY TRA v3.6)	0,034
inhalative	systemic	long-term	23,9855 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

### 5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 6: Cleaning; Industrial uses (SU3).

#### 6.1. Title section

<b>Exposure Scenario name</b>	: Cleaning
<b>Structured Short Title</b>	: Cleaning; Industrial uses (SU3).

Environment		
<b>CS 1</b>	<b>Use of non-reactive processing aid at industrial site (no inclusion into or onto article)</b>	<b>ERC4</b>
Worker		
<b>CS 2</b>	<b>Industrial spraying</b>	<b>PROC7</b>
<b>CS 3</b>	<b>Roller application or brushing</b>	<b>PROC10</b>
<b>CS 4</b>	<b>Treatment of articles by dipping and pouring</b>	<b>PROC13</b>

#### 6.2. Conditions of use affecting exposure

**6.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)**

**6.2.2. Control of worker exposure: Industrial spraying (PROC7)**

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: 420 min
Use frequency	: 5 days per week
Technical and organisational conditions and measures	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	

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Local exhaust ventilation Inhalation - minimum efficiency of 95 %
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 6.2.3. Control of worker exposure: Roller application or brushing (PROC10)

<b>Product (article) characteristics</b>
Covers concentrations up to 100 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 480 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

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### 6.2.4. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 6.3. Exposure estimation and reference to its source

#### 6.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

#### 6.3.2. Worker exposure: Industrial spraying (PROC7)

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Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,0875 mg/m <sup>3</sup> (EASY TRA v3.6)	0,299
inhalative	systemic	long-term	20,9873 mg/m <sup>3</sup> (EASY TRA v3.6)	0,214

### 6.3.3. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	47,971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,490

### 6.3.4. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	47,971 mg/m <sup>3</sup> (EASY TRA v3.6)	0,490

### 6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 7: Cleaning; Professional uses (SU22).

#### 7.1. Title section

<b>Exposure Scenario name</b>	: Cleaning
<b>Structured Short Title</b>	: Cleaning; Professional uses (SU22).

Environment		
<b>CS 1</b>	<b>Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use of reactive processing aid (no inclusion into or onto article, indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor), Widespread use of reactive processing aid (no inclusion into or onto article, outdoor)</b>	ERC8a, ERC8b, ERC8d, ERC8e
Worker		
<b>CS 2</b>	<b>Roller application or brushing</b>	PROC10
<b>CS 3</b>	<b>Non-industrial spraying</b>	PROC11
<b>CS 4</b>	<b>Treatment of articles by dipping and pouring</b>	PROC13

#### 7.2. Conditions of use affecting exposure

**7.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC8b) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC8e)**

#### 7.2.2. Control of worker exposure: Roller application or brushing (PROC10)

Product (article) characteristics	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: 480 min

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Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 7.2.3. Control of worker exposure: Non-industrial spraying (PROC11)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 60 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use

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**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply**

Clean equipment and the work area every day.

### 7.2.4. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 7.3. Exposure estimation and reference to its source

**7.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use of reactive processing aid (no inclusion into or onto article, indoor) (ERC8b) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use of reactive processing aid (no inclusion into or onto article, outdoor) (ERC8e)**

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### Additional information on exposure estimation

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

#### 7.3.2. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,04 mg/m <sup>3</sup> (EASY TRA v3.6)	0,137
inhalative	systemic	long-term	23,9855 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

#### 7.3.3. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	19,1884 mg/m <sup>3</sup> (EASY TRA v3.6)	0,196

#### 7.3.4. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,04 mg/m <sup>3</sup> (EASY TRA v3.6)	0,137
inhalative	systemic	long-term	9,5942 mg/m <sup>3</sup> (EASY TRA v3.6)	0,098

#### 7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 8: Use in coatings; Industrial uses (SU3).

#### 8.1. Title section

<b>Exposure Scenario name</b>	:	Use in coatings
<b>Structured Short Title</b>	:	Use in coatings; Industrial uses (SU3).

Environment		
<b>CS 1</b>	<b>Use of non-reactive processing aid at industrial site (no inclusion into or onto article)</b>	ERC4
Worker		
<b>CS 2</b>	<b>Industrial spraying</b>	PROC7
<b>CS 3</b>	<b>Roller application or brushing</b>	PROC10
<b>CS 4</b>	<b>Treatment of articles by dipping and pouring</b>	PROC13

#### 8.2. Conditions of use affecting exposure

**8.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)**

**8.2.2. Control of worker exposure: Industrial spraying (PROC7)**

Product (article) characteristics	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: 240 min
Use frequency	: 5 days per week
Technical and organisational conditions and measures	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	

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<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

### 8.2.3. Control of worker exposure: Roller application or brushing (PROC10)

<b>Product (article) characteristics</b>
Covers concentrations up to 5 %
Physical form of product : Liquid
Vapour pressure : 3 Pa
Temperature : 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>
Duration : 480 min
Use frequency : 5 days per week
<b>Technical and organisational conditions and measures</b>
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %
<b>Other conditions affecting workers exposure</b>
Indoor or outdoor use : Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>
Clean equipment and the work area every day.

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### 8.2.4. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 8.3. Exposure estimation and reference to its source

#### 8.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

#### 8.3.2. Worker exposure: Industrial spraying (PROC7)

Exposure route	Health effect	Exposure	Exposure	RCR
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		indicator	estimate	
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	57,5653 mg/m <sup>3</sup> (EASY TRA v3.6)	0,587

### 8.3.3. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	9,5942 mg/m <sup>3</sup> (EASY TRA v3.6)	0,098

### 8.3.4. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,02 mg/m <sup>3</sup> (EASY TRA v3.6)	0,068
inhalative	systemic	long-term	9,5942 mg/m <sup>3</sup> (EASY TRA v3.6)	0,098

### 8.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 9: Use in coatings; Professional uses (SU22).

#### 9.1. Title section

<b>Exposure Scenario name</b>	:	Use in coatings
<b>Structured Short Title</b>	:	Use in coatings; Professional uses (SU22).

Environment		
<b>CS 1</b>	<b>Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use leading to inclusion into/onto article (indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor), Widespread use leading to inclusion into/onto article (outdoor)</b>	ERC8a, ERC8c, ERC8d, ERC8f
Worker		
<b>CS 2</b>	<b>Roller application or brushing</b>	PROC10
<b>CS 3</b>	<b>Non-industrial spraying</b>	PROC11
<b>CS 4</b>	<b>Treatment of articles by dipping and pouring</b>	PROC13
<b>CS 5</b>	<b>Treatment of articles by dipping and pouring</b>	PROC13

#### 9.2. Conditions of use affecting exposure

**9.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)**

#### 9.2.2. Control of worker exposure: Roller application or brushing (PROC10)

Product (article) characteristics	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Duration	: 480 min

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Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 9.2.3. Control of worker exposure: Non-industrial spraying (PROC11)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 60 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use

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**Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply**

Clean equipment and the work area every day.

### 9.2.4. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 9.2.5. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

<b>Product (article) characteristics</b>	
Covers concentrations up to 100 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa

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Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 480 min
Use frequency	: 5 days per week
<b>Technical and organisational conditions and measures</b>	
Ensure that direct skin contact is avoided. Ensure safe systems of work or equivalent arrangements are in place to manage risks.	
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	
<b>Other conditions affecting workers exposure</b>	
Indoor or outdoor use	: Indoor use
<b>Additional good practice advice. Obligations according to Article 37(4) of REACH do not apply</b>	
Clean equipment and the work area every day.	

### 9.3. Exposure estimation and reference to its source

**9.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f)**

<b>Additional information on exposure estimation</b>
As no environmental hazard was identified no environmental-related exposure assessment and risk characterization was performed.

### 9.3.2. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,04 mg/m <sup>3</sup> (EASY TRA v3.6)	0,137
inhalative	systemic	long-term	23,9855 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

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### 9.3.3. Worker exposure: Non-industrial spraying (PROC11)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	19,1884 mg/m <sup>3</sup> (EASY TRA v3.6)	0,196

### 9.3.4. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,04 mg/m <sup>3</sup> (EASY TRA v3.6)	0,137
inhalative	systemic	long-term	9,5942 mg/m <sup>3</sup> (EASY TRA v3.6)	0,098

### 9.3.5. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	local	long-term	0,1 mg/m <sup>3</sup> (EASY TRA v3.6)	0,341
inhalative	systemic	long-term	23,9855 mg/m <sup>3</sup> (EASY TRA v3.6)	0,245

## 9.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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### ES 10: Use in coatings; Consumer uses (SU21).

#### 10.1. Title section

<b>Exposure Scenario name</b>	:	Use in coatings
<b>Structured Short Title</b>	:	Use in coatings; Consumer uses (SU21).

Consumer		
<b>CS 1</b>	Adhesives, sealants	PC1
<b>CS 2</b>	Coatings and paints, thinners, paint removers	PC9a
<b>CS 3</b>	Non-metal surface treatment products	PC15
<b>CS 4</b>	Ink and toners	PC18
<b>CS 5</b>	Leather treatment products	PC23
<b>CS 6</b>	Polishes and wax blends	PC31

#### 10.2. Conditions of use affecting exposure

##### 10.2.1. Control of consumer exposure: Adhesives, sealants (PC1)

Product (article) characteristics	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
Amount used (or contained in articles), frequency and duration of use/exposure	
Amount used per event	: 0,5 g/event
Duration	: 30 min
Use frequency	: 1 days per year

##### 10.2.2. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a)

Product (article) characteristics	
Covers concentrations up to 5 %	
Physical form of product	: Liquid

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Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Amount used per event	: 7 g/event
Duration	: 60 min
Use frequency	: 5 days per year

### 10.2.3. Control of consumer exposure: Non-metal surface treatment products (PC15)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Amount used per event	: 0,5 g/event
Duration	: 240 min
Use frequency	: 1 days per year
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Ensure spraying away from persons.	
<b>Other conditions affecting consumers exposure</b>	
Room size	: 58 m <sup>3</sup>
Ventilation rate	: 0,5

### 10.2.4. Control of consumer exposure: Ink and toners (PC18)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C

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<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Amount used per event	: 0,1 g/event
Duration	: 120 min
Use frequency	: 5 days per year

### 10.2.5. Control of consumer exposure: Leather treatment products (PC23)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Duration	: 240 min
Use frequency	: 1 days per year
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Ensure spraying away from persons.	
<b>Other conditions affecting consumers exposure</b>	
Room size	: 58 m <sup>3</sup>
Ventilation rate	: 0,5

### 10.2.6. Control of consumer exposure: Polishes and wax blends (PC31)

<b>Product (article) characteristics</b>	
Covers concentrations up to 5 %	
Physical form of product	: Liquid
Vapour pressure	: 3 Pa
Temperature	: 20 °C
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Amount used per event	: 0,1 g/event

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Duration	: 5 min
Use frequency	: 8 days per year
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Ensure spraying away from persons.	
<b>Other conditions affecting consumers exposure</b>	
Room size	: 34 m <sup>3</sup>
Ventilation rate	: 1,5

### 10.3. Exposure estimation and reference to its source

#### 10.3.1. Consumer exposure: Adhesives, sealants (PC1)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0011 mg/kg bw/day (Consexpo v4.1)	< 0,001
inhalative	systemic	long-term	13,5842 mg/m <sup>3</sup> (Consexpo v4.1)	0,468

#### 10.3.2. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0011 mg/kg bw/day (Consexpo v4.1)	< 0,001
inhalative	systemic	long-term	3,3556 mg/m <sup>3</sup> (Consexpo v4.1)	0,116

#### 10.3.3. Consumer exposure: Non-metal surface treatment products (PC15)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0007 mg/kg bw/day (Consexpo v4.1)	< 0,001
inhalative	systemic	long-term	0,0418 mg/m <sup>3</sup>	0,001

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			(Consexpo v4.1)	
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### 10.3.4. Consumer exposure: Ink and toners (PC18)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0011 mg/kg bw/day (Consexpo v4.1)	< 0,001
inhalative	systemic	long-term	0,7989 mg/m <sup>3</sup> (Consexpo v4.1)	0,023

### 10.3.5. Consumer exposure: Leather treatment products (PC23)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0007 mg/kg bw/day (Consexpo v4.1)	< 0,001
inhalative	systemic	long-term	0,0418 mg/m <sup>3</sup> (Consexpo v4.1)	0,001

### 10.3.6. Consumer exposure: Polishes and wax blends (PC31)

Exposure route	Health effect	Exposure indicator	Exposure estimate	RCR
dermal	systemic	long-term	0,0022 mg/kg bw/day (Consexpo v4.1)	< 0,001
inhalative	systemic	long-term	0,0094 mg/m <sup>3</sup> (Consexpo v4.1)	< 0,001

## 10.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

<http://www.ecetoc.org/tra>