

# SAFETY DATA SHEET



n-Propyl acetate  
10580

Version / Revision  
Supersedes Version

5  
4.01\*\*\*

Revision Date  
Issuing date

25-Jun-2021  
25-Jun-2021

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

### 1.1. Product identifier

Identification of the  
substance/preparation

# n-Propyl acetate

Chemical Name

Propyl acetate

CAS-No

109-60-4

EC No.

203-686-1

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

Identified uses

Formulation  
Distribution of substance  
coatings  
cleaning agent  
Lubricants and lubricant additives  
Metal working fluids / rolling oils  
laboratory chemicals

Uses advised against

None

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

Company/Undertaking  
Identification

**OQ Chemicals GmbH**  
Rheinpromenade 4A  
D-40789 Monheim  
Germany

Product Information

Product Stewardship  
FAX: +49 (0)208 693 2053  
email: sc.psq@oq.com

### 1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 670 (UK)  
available 24/7

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Flammable liquid Category 2, H225

Serious eye damage/eye irritation Category 2, H319

Target Organ Systemic Toxicant - Single exposure Category 3, H336

Additional information

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For full text of Hazard- and EU Hazard-statements see SECTION 16.

## 2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

### Hazard pictograms



### Signal word

**Danger**

### Hazard statements

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

### Precautionary statements

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233: Keep container tightly closed.  
P261: Avoid breathing gas/mist/vapours.  
P280: Wear protective gloves/protective clothing/eye protection/face protection.  
P303 + P361 + P353: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.  
P304 + P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.  
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P312: Call a POISON CENTRE/doctor if you feel unwell.  
P403 + P235: Store in a well ventilated place. Keep cool.

### Supplemental Hazard Information (EU)

EUH 066: Repeated exposure may cause skin dryness or cracking.

## 2.3. Other hazards

Vapours may form explosive mixture with air

Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback

Components of the product may be absorbed into the body by inhalation and ingestion

### PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

## SECTION 3: Composition / information on ingredients

### 3.1. Substances

Component	CAS-No	1272/2008/EC	Concentration (%)
Propyl acetate	109-60-4	Flam. Liq. 2; H225 Eye Irrit. 2; H319	> 99,5

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		STOT SE 3; H336 EU H066	
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For full text of Hazard- and EU Hazard-statements see SECTION 16.

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

#### Inhalation

Keep at rest. Breathe with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

#### Skin

Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

#### Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

#### Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

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

#### Main symptoms

dizziness, drowsiness, cough, unconsciousness.

#### Special hazard

central nervous system effects, Prolonged skin contact may defat the skin and produce dermatitis.

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

#### General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

#### Suitable extinguishing media

foam, dry chemical, carbon dioxide (CO<sub>2</sub>), water spray

#### Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

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

Under conditions giving incomplete combustion, hazardous gases produced may consist of:

carbon monoxide (CO)

carbon dioxide (CO<sub>2</sub>)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback

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Vapours may form explosive mixture with air

## 5.3. Advice for firefighters

### Special protective equipment for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

### Precautions for firefighting

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

## SECTION 6: Accidental release measures

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

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

### 6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

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

#### Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

#### Methods for cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

### 6.4. Reference to other sections

For personal protective equipment see section 8.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Further info may be available in the appropriate Exposure scenarios in the annex to this SDS.

#### Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms. Do not use compressed air for filling, discharging or handling.

#### Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

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## Advice on the protection of the environment

See Section 8: Environmental exposure controls.

## Incompatible products

oxidizing agents  
bases  
amines

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

### Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour is heavier than air and can travel considerable distance to a source of ignition and flashback. Vapours may form explosive mixture with air.

### Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care.

### Suitable material

stainless steel, mild steel

### Unsuitable material

Attacks some forms of plastic and rubber

### Temperature class

T2

## 7.3. Specific end use(s)

Formulation  
Distribution of substance  
coatings  
cleaning agent  
Lubricants and lubricant additives  
Metal working fluids / rolling oils  
laboratory chemicals  
For specific end use information see the annex of this safety data sheet

## SECTION 8: Exposure controls / personal protection

### 8.1. Control parameters

#### Exposure limits European Union

No exposure limits established

#### Exposure limits UK

##### EH40 WELs

Component	TWA (mg/m <sup>3</sup> )	TWA (ppm)	STEL (mg/m <sup>3</sup> )	STEL (ppm)
Propyl acetate	849	200	1060	250

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CAS: 109-60-4				
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## Note

For details and further information please refer to the original regulation.

## DNEL & PNEC

### Propyl acetate, CAS: 109-60-4

#### Workers

DN(M)EL - long-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	No hazard identified
DN(M)EL - long-term exposure - local effects - Inhalation	420 mg/m <sup>3</sup>
DN(M)EL - acute / short-term exposure - local effects - Inhalation	840 mg/m <sup>3</sup>
DN(M)EL - long-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - local effects - eyes	Low hazard (no threshold derived)

#### General population

DN(M)EL - long-term exposure - systemic effects - Inhalation	149 mg/m <sup>3</sup>
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	298 mg/m <sup>3</sup>
DN(M)EL - long-term exposure - local effects - Inhalation	210 mg/m <sup>3</sup>
DN(M)EL - acute / short-term exposure - local effects - Inhalation	420 mg/m <sup>3</sup>
DN(M)EL - long-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - acute / short-term exposure - local effects - Dermal	No hazard identified
DN(M)EL - long-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - acute / short-term exposure - systemic effects - Oral	No hazard identified
DN(M)EL - local effects - eyes	Low hazard (no threshold derived)

#### Environment

PNEC aqua - freshwater	0,06 mg/l
PNEC aqua - marine water	0,006 mg/l
PNEC aqua - intermittent releases	0,6 mg/l
PNEC STP	1 mg/l
PNEC sediment - freshwater	0,16 mg/kg dw
PNEC sediment - marine water	0,016 mg/kg dw
PNEC Air	No hazard identified
PNEC soil	0,0215 mg/kg dw
Secondary poisoning	No potential for bioaccumulation

## 8.2. Exposure controls

### Special adaptations (REACH)

Not applicable.

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## Appropriate Engineering controls

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

## Personal protective equipment

### General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

### Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

### Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Equipment should conform to EN 166

### Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

<b>Suitable material</b>	butyl-rubber
<b>Evaluation</b>	according to EN 374: level 4
<b>Glove thickness</b>	approx 0,3 mm
<b>Break through time</b>	approx 120 min

<b>Suitable material</b>	polyvinylchloride / nitrile rubber
<b>Evaluation</b>	according to EN 374: level 1
<b>Glove thickness</b>	approx 0,9 mm
<b>Break through time</b>	approx 15 min

### Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

### Respiratory protection

Respirator with A/PA filter. Full mask with above mentioned filter according to producers using requirements or self-contained breathing apparatus. Equipment should conform to EN 136 or EN 140 and EN 143.

### Environmental exposure controls

If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

### Additional advice

Further details on substance data can be found in the registration dossier under the following link:  
<http://echa.europa.eu/information-on-chemicals/registered-substances>. For specific exposure controls see the annex to this safety data sheet.

## SECTION 9: Physical and chemical properties

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## 9.1. Information on basic physical and chemical properties

Appearance	liquid
Colour	colourless
Odour	fruity
Odour threshold	No data available
pH	No data available
Melting point/range	< -90 °C
Method	DIN ISO 3016
Boiling point/range	102 °C @ 1013 hPa
Method	OECD 103
Flash point	12 °C
Method	EU A.9
Evaporation rate	No data available
Flammability (solid, gas)	Does not apply, the substance is a liquid
Lower explosion limit	2 Vol %
Upper explosion limit	8 Vol %

### Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
34	3,4	0,034	20	68	
151,5	15,2	0,150	50	122	

Vapour density 3,5 (Air = 1) @ 20 °C (68 °F)

### Relative density

Values	@ °C	@ °F	Method
0,888	20	68	DIN 51757

### Solubility

18,7 g/l @ 20 °C, in water

### log Pow

1,4 @ 25 °C (77 °F), OECD 117

### Autoignition temperature

380 °C @ 1013 hPa

#### Method

DIN 51794

### Decomposition temperature

No data available

### Viscosity

0,58 mPa\*s @ 20 °C

#### Method

ASTM D445, dynamic

### Explosive properties

Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

### Oxidizing properties

Does not apply, substance is not oxidising. There are no chemical groups associated with oxidizing properties

## 9.2. Other information

Molecular weight	102,13
Molecular formula	C5 H10 O2
log Koc	1008 calculated
Refractive index	1,384 @ 20 °C
Surface tension	67,5 mN/m @ 20,1 °C (68,2 °F) @ 1000 mg/l, OECD 115

## SECTION 10: Stability and Reactivity

### 10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

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## 10.2. Chemical stability

Stable under recommended storage conditions.

## 10.3. Possibility of hazardous reactions

Vapours may form explosive mixture with air.

## 10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

## 10.5. Incompatible materials

oxidizing agents, amines, bases.

## 10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

**Likely routes of exposure** Ingestion, Inhalation, Eye contact, Skin contact

<b>Acute toxicity</b>				
<b>Propyl acetate (109-60-4)</b>				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	~ 8700 mg/kg	rat, male	
Dermal	LD50	> 17800 mg/kg	rabbit male	
Inhalative	LC50	~ 32 mg/l (4h)	rat	(vapour)

#### **Propyl acetate, CAS: 109-60-4**

##### **Assessment**

Based on available data, the classification criteria are not met for:

Acute oral toxicity

Acute dermal toxicity

Acute inhalation toxicity

##### **Irritation and corrosion**

#### **Propyl acetate (109-60-4)**

Target Organ Effects	Species	Result	Method	
Skin	rabbit	No skin irritation		in vivo
Eyes	rabbit	irritating		in vivo

#### **Propyl acetate, CAS: 109-60-4**

##### **Assessment**

The available data lead to the classification given in section 2

##### **Sensitization**

#### **Propyl acetate (109-60-4)**

Target Organ Effects	Species	Evaluation	Method	
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Skin	guinea pig	not sensitizing	Maximisation Test	read across
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## **Propyl acetate, CAS: 109-60-4**

### **Assessment**

Based on available data, the classification criteria are not met for:

Skin sensitization

For respiratory sensitization, no data are available

### **Subacute, subchronic and prolonged toxicity**

#### **Propyl acetate (109-60-4)**

Type	Dose	Species	Method	
Subchronic toxicity	NOAEL: 2,35 mg/l	rat, male/female	EPA OTS 798.2450	Inhalation read across
Subchronic toxicity	NOAEC: >= 6,48 mg/l (90d) systemic effects	rat, male/female	OECD 413	Inhalation
Subchronic toxicity	NOAEC: 0,63 mg/l (90d) Local effects	rat, male/female	OECD 413	Inhalation
Subchronic toxicity	LOAEC: 2,14 mg/l (90 d) Local effects	rat, male/female	OECD 413	Inhalation

## **Propyl acetate, CAS: 109-60-4**

### **Assessment**

Based on available data, the classification criteria are not met for:

STOT RE

### **Carcinogenicity, Mutagenicity, Reproductive toxicity**

#### **Propyl acetate (109-60-4)**

Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	OECD 476 (Mammalian Gene Mutation)	
Mutagenicity		V79 cells, Chinese hamster	negative	Chromosomal Aberration	read across
Reproductive toxicity	LOAEC: 750 ppm	rat, parental male/female		OECD 416 Inhalation	read across Local effects
Developmental Toxicity	LOAEL: 7,05 mg/l	rat	Maternal toxicity	Inhalation	read across
Developmental Toxicity	NOAEL 7,05 mg/l	rat	Teratogenicity	Inhalation	read across
Developmental Toxicity	NOAEL 7,05 mg/l	rabbit	Maternal toxicity	Inhalation	read across
Developmental Toxicity	NOAEL 7,05 mg/l	rabbit	Teratogenicity	Inhalation	read across
Mutagenicity		human lymphoblastoid cells (TK6)	negative	OECD 487 micronucleus test	In vitro study
Reproductive toxicity	NOAEC: 750 ppm	rat, parental male/female		OECD 416 Inhalation	Developmental toxicity read across
Reproductive toxicity	NOAEC: 2000 ppm	rat, parental male/female		OECD 416 Inhalation	Fertility read across
Reproductive toxicity	NOAEC: 750 ppm	rat, 1. Generation,		OECD 416 Inhalation	read across

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		male/female rat 2. Generation, male/female			
Developmental Toxicity	NOAEL 1000 mg/kg/d	rat rabbit		OECD 414, Oral	Maternal toxicity Developmental toxicity, Teratogenicity

## Propyl acetate, CAS: 109-60-4

### CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

### Evaluation

In vitro tests did not show mutagenic effects

## Propyl acetate, CAS: 109-60-4

### Main symptoms

dizziness, drowsiness, cough, unconsciousness.

### Target Organ Systemic Toxicant - Single exposure

The available data lead to the classification given in section 2

### Target Organ Systemic Toxicant - Repeated exposure

Based on available data, the classification criteria are not met for:

STOT RE

### Other adverse effects

Components of the product may be absorbed into the body by inhalation and ingestion. Dries out the skin.

### Note

Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

<http://echa.europa.eu/information-on-chemicals/registered-substances>.

## SECTION 12: Ecological information

### 12.1. Toxicity

Acute aquatic toxicity			
Propyl acetate (109-60-4)			
Species	Exposure time	Dose	Method
Pimephales promelas (fathead minnow)	96h	LC50: 60 mg/l	
Daphnia magna (Water flea)	48h	EC50: 91,5 mg/l	OECD 202
Pseudokirchneriella subcapitata	72h	EC50: 672 mg/l (Growth rate)	OECD 201
Pseudomonas putida	16 h	TTC: 170 mg/l	DIN 38412, part 8

### Long term toxicity

#### Propyl acetate (109-60-4)

Type	Species	Dose	Method
Aquatic toxicity	Pseudokirchneriella subcapitata	NOEC: 83,2 mg/l (3d)	OECD 201

### 12.2. Persistence and degradability

#### Propyl acetate, CAS: 109-60-4

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## Biodegradation

62 % (5 d), Sewage, domestic, non-adapted, aerobic, OECD 301 D.

Abiotic Degradation		
Propyl acetate (109-60-4)		
Type	Result	Method
Hydrolysis	not expected	
Photolysis	Half-life (DT50): 3,2 days	SRC AOP v1.92

## 12.3. Bioaccumulative potential

Propyl acetate (109-60-4)		
Type	Result	Method
log Pow	1,4 @ 25 °C (77 °F)	measured, OECD 117
BCF	not expected	

## 12.4. Mobility in soil

Propyl acetate (109-60-4)		
Type	Result	Method
Surface tension	no data available 67,5 mN/m @ 20,1 °C (68,2 °F) @ 1000 mg/l	OECD 115
Adsorption/Desorption	Koc: 10,17	calculated SRC PCKOCWIN v2.00
Distribution to environmental compartments	no data available	

## 12.5. Results of PBT and vPvB assessment

### Propyl acetate, CAS: 109-60-4

#### PBT and vPvB assessment

This substance is not considered to be persistent, bioaccumulating nor toxic (PBT), nor very persistent nor very bioaccumulating (vPvB)

## 12.6. Other adverse effects

### Propyl acetate, CAS: 109-60-4

No data available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

#### Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Hazardous waste according to European Waste Catalogue (EWC)

#### Uncleaned empty packaging

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Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

## SECTION 14: Transport information

### ADR/RID

<b>14.1. UN number</b>	UN 1276
<b>14.2. UN proper shipping name</b>	n-Propyl acetate
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	II
<b>14.5. Environmental hazards</b>	no
<b>14.6. Special precautions for user</b>	
ADR Tunnel restriction code	(D/E)
Classification Code	F1
Hazard Number	33

### ADN

ADN Container

<b>14.1. UN number</b>	UN 1276
<b>14.2. UN proper shipping name</b>	n-Propyl acetate
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	II
<b>14.5. Environmental hazards</b>	no
<b>14.6. Special precautions for user</b>	
Classification Code	F1
Hazard Number	33

### ADN

ADN Tanker

<b>14.1. UN number</b>	UN 1276
<b>14.2. UN proper shipping name</b>	n-Propyl acetate
<b>14.3. Transport hazard class(es)</b>	3
Subsidiary Risk	N3
<b>14.4. Packing group</b>	II
<b>14.5. Environmental hazards</b>	no
<b>14.6. Special precautions for user</b>	
Classification Code	F1

### ICAO-TI / IATA-DGR

<b>14.1. UN number</b>	UN 1276
<b>14.2. UN proper shipping name</b>	n-Propyl acetate
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	II
<b>14.5. Environmental hazards</b>	no
<b>14.6. Special precautions for user</b>	no data available

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## IMDG

<b>14.1. UN number</b>	UN 1276
<b>14.2. UN proper shipping name</b>	Propyl acetate
<b>14.3. Transport hazard class(es)</b>	3
<b>14.4. Packing group</b>	II
<b>14.5. Environmental hazards</b>	no
<b>14.6. Special precautions for user</b>	
EmS	F-E, S-D
<b>14.7. Transport in bulk according to Annex II of MARPOL and the IBC Code</b>	
Product name	n-Propyl acetate
Ship type	3
Pollution category	Y

## **SECTION 15: Regulatory information**

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

#### **Regulation 1272/2008, Annex VI**

##### **Propyl acetate, CAS: 109-60-4**

<b>Classification</b>	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336
<b>Hazard pictograms</b>	GHS02 Flame GHS07 Exclamation mark
<b>Signal word</b>	Danger
<b>Hazard statements</b>	H225 H319 H336 EUH066

##### **DI 2012/18/EU (Seveso III)**

<b>Category</b>	Annex I, part 1: P5a - c; depending on conditions
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##### **DI 1999/13/EC (VOC Guideline)**

<b>Component</b>	<b>Status</b>
Propyl acetate CAS: 109-60-4	regulated

## **International Inventories**

##### **Propyl acetate, CAS: 109-60-4**

AICS (AU)  
DSL (CA)

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IECSC (CN)  
EC-No. 2036861 (EU)  
ENCS (2)-727 (JP)  
ISHL (2)-727 (JP)  
KECI KE-29778 (KR)  
INSQ (MX)  
PICCS (PH)  
TSCA (US)  
NZIoC (NZ)  
TCSI (TW)

## National regulatory information Great Britain

### Releases to air (Pollution Inventory Substances)

not subject

### Releases to water (Pollution Inventory Substances)

not subject

### Releases to sewer (Pollution Inventory Substances)

not subject

### The REACH etc. (Amendment etc.) (EU Exit) Regulations 2019 No. 758 \*\*\*

Component	Status
Propyl acetate CAS: 109-60-4	The substance is/will be pre-registered.***

For details and further information please refer to the original regulation

## 15.2. Chemical safety assessment

The Chemical Safety Report (CSR) has been generated. For Exposure Scenarios see the annex.

## SECTION 16: Other information

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

H225: Highly flammable liquid and vapour.

H319: Causes serious eye irritation.

H336: May cause drowsiness or dizziness.

EUH 066: Repeated exposure may cause skin dryness or cracking.

### Abbreviations

A table of terms and abbreviations can be found under the following link:

[http://echa.europa.eu/documents/10162/13632/information\\_requirements\\_r20\\_en.pdf](http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf)

### Training advice

For effective first-aid, special training / education is needed.

### Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on OQ owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.



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## Further information for the safety data sheet

Changes against the previous version are marked by \*\*\*. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the OQ homepage ([www.chemicals.oq.com](http://www.chemicals.oq.com)).

### Disclaimer

**For industrial use only.** The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. OQ makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

**End of Safety Data Sheet**

# Annex to the extended Safety Data Sheet (eSDS)

## General information

A quantitative approach used to conclude safe use for:

Long term local hazards via inhalation

Acute local hazards via inhalation

Environmental compartment

A qualitative approach used to conclude safe use for:

Local hazards via eyes

For consumer applications in the following usage areas please contact OQ ([sc.psq@oq.com](mailto:sc.psq@oq.com)):

Uses in coatings

Use in Cleaning Agents

lubricants

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

Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described below and you are unsure if they are also safe

## Operational conditions and risk management measures

Supervision in place to check that the RMMs in place are being used correctly and OCs followed.

Following operational conditions and risk management measures, are based on qualitative risk characterisation:

Minimization of manual phases

Avoid direct contact with the chemical/the product/the preparation by establishing organisational measures

Wear protective gloves and eye/face protection

## Exposure scenario identification

- 1 **Formulation & (re)packing of substances and mixtures**
- 2 **Distribution of substance**
- 3 **Uses in coatings**
- 4 **Uses in coatings**
- 5 **Use in Cleaning Products**
- 6 **Use in Cleaning Products**
- 7 **lubricants**

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- 8 lubricants
- 9 Metal working fluids / rolling oils
- 10 Metal working fluids / rolling oils
- 11 Use in laboratories

## Number of the ES 1

Short title of the exposure scenario

### Formulation & (re)packing of substances and mixtures

#### List of use descriptors

#### Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites  
SU10: Formulation [mixing] of preparations and/or re-packaging (excluding alloys)

#### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure  
PROC2: Use in closed, continuous process with occasional controlled exposure  
PROC3: Use in closed batch process (synthesis or formulation)  
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises  
PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)  
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
PROC14: production of preparations or articles by tableting, compression, extrusion, pelettisation  
PROC15: Use as laboratory reagent

#### Environmental release categories [ERC]

ERC2: Formulation of preparations (mixtures)

#### Product characteristics

Refer to attached safety data sheets

#### Processes and activities covered by the exposure scenario

Formulation of the substance and its mixtures in batch or continuous operations within closed or contained systems, including incidental exposures during storage, materials transfers, mixing, maintenance, sampling and associated laboratory activities

#### Further explanations

Industrial use

Assessment tool used:

Chesar 3.3

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently).

Assumes an advanced standard of occupational Health and Safety Management System

#### Contributing Scenarios

Number of the contributing scenario

1

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## Contributing exposure scenario controlling environmental exposure for ERC 2

### Product characteristics

liquid.

### Amounts used

Daily amount per site: 20 to

Annual amount per site: 2000 to

Fraction of EU tonnage used in region: 1

### Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 0.025%

Release fraction to wastewater from process: 1E-3%

Release fraction to soil from process: 0.01%

### Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99,95 % Onsite treatment off-air.

Upgrade Systems in place or implement additional treatment. Assumed Efficiency: 99 %

### Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m<sup>3</sup>/d): 2000

Water flow in sewage/river (m<sup>3</sup>/day): 18000

The minimum grade of elimination in the sewage plant is (%): 16,25

Do not apply industrial sludge to natural soils

Number of the contributing scenario 2

## Contributing exposure scenario controlling worker exposure for PROC 1

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

Number of the contributing scenario 3

## Contributing exposure scenario controlling worker exposure for PROC 2

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

Number of the contributing scenario 4

## Contributing exposure scenario controlling worker exposure for PROC 3

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

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provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario 5**  
**Contributing exposure scenario controlling worker exposure for PROC 4**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario 6**  
**Contributing exposure scenario controlling worker exposure for PROC 5**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation):

90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario 7**  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation):

90 % (inhalative); 0 % (dermal).

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

Use suitable eye protection.

**Number of the contributing scenario 8**  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation):

95 % (inhalative); 0 % (dermal).

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

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

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**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 9**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 14**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 15**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Environment**

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 8.53E-3 mg/l; RCR: 0.142
Fresh Water (Sediment)	PEC: 0.078 mg/kg dw; RCR: 0.491
Marine Water (Pelagic)	PEC: 8.93E-4 mg/l; RCR: 0.149
Marine Water (Sediment)	PEC: 8.22E-3 mg/kg dw; RCR: 0.514
Agricultural Soil	PEC: 8.29E-4 mg/kg dw; RCR: 0.039
Sewage Treatment Plant (Effluent)	PEC: 0.084 mg/l; RCR: 0.084

**Human exposure prediction (oral, dermal, inhalative)**

EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>]. Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects.

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Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2
Proc 4	EE(inhal): 340.4
Proc 5	EE(inhal): 85.11
Proc 8a	EE(inhal): 85.11
Proc 8b	EE(inhal): 21.28
Proc 9	EE(inhal): 85.11
Proc 14	EE(inhal): 425.5
Proc 15	EE(inhal): 170.2

## Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.101
Proc 3	RCR(inhal): 0.203
Proc 4	RCR(inhal): 0.405
Proc 5	RCR(inhal): 0.101
Proc 8a	RCR(inhal): 0.101
Proc 8b	RCR(inhal): 0.025
Proc 9	RCR(inhal): 0.101
Proc 14	RCR(inhal): 0.507
Proc 15	RCR(inhal): 0.203

## Number of the ES 2

Short title of the exposure scenario

## Distribution of substance

## List of use descriptors

### Sector of uses [SU]

SU8: Manufacture of bulk, large scale chemicals (including petroleum products)

SU9: Manufacture of fine chemicals

### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC15: Use as laboratory reagent

### Environmental release categories [ERC]

ERC2: Formulation of preparations (mixtures)

### Product characteristics

Refer to attached safety data sheets

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## Processes and activities covered by the exposure scenario

Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading, distribution and associated laboratory activities.

## Further explanations

Assessment tool used:

Chesar 3.3

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes an advanced standard of occupational Health and Safety Management System

## Contributing Scenarios

**Number of the contributing scenario** 1

**Contributing exposure scenario controlling environmental exposure for ERC 2**

### Amounts used

daily wide dispersive use: 33.3 to/d

Annual amount per site: 10000 to

Fraction of EU tonnage used in region: 0.002

### Frequency and duration of use

Covers use up to: 300 days

### Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 0.025%

Release fraction to wastewater from process: 2E-4%

Release fraction to soil from process: 0.01%

### Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99.99 % Onsite treatment off-air.

Upgrade Systems in place or implement additional treatment. Assumed Efficiency: 99 % Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber, gas removal and/or air filtration, particle removal and/or thermal oxidation and/or vapour recovery, adsorption.

### Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m<sup>3</sup>/d): 2000

The minimum grade of elimination in the sewage plant is (%): 16.25

**Number of the contributing scenario** 2

**Contributing exposure scenario controlling worker exposure for PROC 1**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3

**Contributing exposure scenario controlling worker exposure for PROC 2**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

If no adequate ventilation is available and the operation is carried out for more than 3h, limit the concentration to 4%.

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

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

**Number of the contributing scenario** 4  
**Contributing exposure scenario controlling worker exposure for PROC 3**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 4**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

Wear suitable gloves tested to EN374.

**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 95 % (inhalative); 0 % (dermal).

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

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

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**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 9**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

Use suitable eye protection.

**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 15**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

#### Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 2.95E-3 mg/l; RCR: 0.049
Fresh Water (Sediment)	PEC: 0.027 mg/kg dw; RCR: 0.17
Marine Water (Pelagic)	PEC: 3.35E-4 mg/l; RCR: 0.056
Marine Water (Sediment)	PEC: 3.08E-3 mg/kg dw; RCR: 0.193
Agricultural Soil	PEC: 5.19E-3 mg/kg dw; RCR: 0.241
Sewage Treatment Plant (Effluent)	PEC: 0.028 mg/l; RCR: 0.028

#### Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2
Proc 4	EE(inhal): 340.4
Proc 8a	EE(inhal): 85.11
Proc 8b	EE(inhal): 21.28
Proc 9	EE(inhal): 85.11
Proc 15	EE(inhal): 170.2

#### Risk characterisation

Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values. RCR(inhal): inhalative risk characterisation ratio.

Proc 1	RCR(inhal): < 0.01
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Proc 2	RCR(inhal): 0.101
Proc 3	RCR(inhal): 0.203
Proc 4	RCR(inhal): 0.405
Proc 8a	RCR(inhal): 0.101
Proc 8b	RCR(inhal): 0.025
Proc 9	RCR(inhal): 0.101
Proc 15	RCR(inhal): 0.203

## Number of the ES 3

Short title of the exposure scenario

### Uses in coatings

#### List of use descriptors

#### Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

#### Environmental release categories [ERC]

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

#### Product characteristics

Refer to attached safety data sheets

#### Processes and activities covered by the exposure scenario

Covers the use in coatings (paints, inks, adhesives, etc) within closed or contained systems including incidental exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application activities and film formation) and equipment cleaning, maintenance and associated laboratory activities.

#### Further explanations

Industrial use

Assessment tool used:

Chesar 3.3

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes an advanced standard of occupational Health and Safety Management System

#### Contributing Scenarios

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**Number of the contributing scenario** 1  
**Contributing exposure scenario controlling environmental exposure for ERC 4**

#### Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 4.3a.v1 (ESVOC 5), release factors for (Sp)ERC were modified.

#### Amounts used

Daily amount per site: 30 to

Annual amount per site: 9000 to

Fraction of Regional tonnage used locally: 1

#### Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

#### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 0.05%

Release fraction to wastewater from process: 5E-4%

Release fraction to soil from process: 0%

#### Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99.9 % Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber, gas removal and/or air filtration, particle removal and/or thermal oxidation and/or vapour recovery, adsorption. Onsite treatment off-air.

Upgrade Systems in place or implement additional treatment. Assumed Efficiency: 99 %

#### Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m<sup>3</sup>/d): 2000

Water flow in sewage/river (m<sup>3</sup>/day): 18000

The minimum grade of elimination in the sewage plant is (%): 16.25

Do not apply industrial sludge to natural soils

**Number of the contributing scenario** 2  
**Contributing exposure scenario controlling worker exposure for PROC 1**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3  
**Contributing exposure scenario controlling worker exposure for PROC 2**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4  
**Contributing exposure scenario controlling worker exposure for PROC 3**

#### Frequency and duration of use

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8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 4**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for PROC 5**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation):

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95 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 9**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 10**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 13**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 12  
**Contributing exposure scenario controlling worker exposure for PROC 15**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

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## Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 6.44E-3 mg/l; RCR: 0.107
Fresh Water (Sediment)	PEC: 0.059 mg/kg dw; RCR: 0.37
Marine Water (Pelagic)	PEC: 6.84E-4 mg/l; RCR: 0.114
Marine Water (Sediment)	PEC: 6.29E-3 mg/kg dw; RCR: 0.393
Agricultural Soil	PEC: 0.063 mg/kg dw; RCR: 0.063
Sewage Treatment Plant (Effluent)	PEC: 6.29E-3 mg/l; RCR: 0.393

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2
Proc 4	EE(inhal): 340.4
Proc 5	EE(inhal): 85.11
Proc 8a	EE(inhal): 85.11
Proc 8b	EE(inhal): 21.28
Proc 9	EE(inhal): 85.11
Proc 10	EE(inhal): 85.11
Proc 13	EE(inhal): 85.11
Proc 15	EE(inhal): 170.2

## Risk characterisation

Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values. RCR(inhal): inhalative risk characterisation ratio.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.101
Proc 3	RCR(inhal): 0.203
Proc 4	RCR(inhal): 0.405
Proc 5	RCR(inhal): 0.101
Proc 8a	RCR(inhal): 0.101
Proc 8b	RCR(inhal): 0.025
Proc 9	RCR(inhal): 0.101
Proc 10	RCR(inhal): 0.101
Proc 13	RCR(inhal): 0.101
Proc 15	RCR(inhal): 0.203

## Number of the ES 4

Short title of the exposure scenario

### Uses in coatings

### List of use descriptors

### Sector of uses [SU]

SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

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## Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC15: Use as laboratory reagent

PROC19: Hand-mixing with intimate contact and only PPE available

## Environmental release categories [ERC]

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8d: Wide dispersive outdoor use of processing aids in open systems

## Product characteristics

Refer to attached safety data sheets

## Processes and activities covered by the exposure scenario

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning

## Further explanations

Professional use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 11

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes a good basic standard of occupational hygiene is implemented

## Contributing Scenarios

**Number of the contributing scenario**

1

**Contributing exposure scenario controlling environmental exposure for ERC 8d**

## Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 8.3b.v1.

## Amounts used

daily wide dispersive use: 0.0025 to/d

Fraction of EU tonnage used in region: 0.1

## Frequency and duration of use

Covers use up to: 365 days

## Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

## Technical conditions and measures at process level (source) to prevent release

Release fraction to air from wide dispersive use (regional only): 98%

Release fraction to wastewater from wide dispersive use: 1%

Release fraction to soil from wide dispersive use (regional only): 1%

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## Conditions and measures related to municipal sewage treatment plant

The minimum grade of elimination in the sewage plant is (%): 16.253

**Number of the contributing scenario** 2  
**Contributing exposure scenario controlling worker exposure for PROC 1**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3  
**Contributing exposure scenario controlling worker exposure for PROC 2**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4  
**Contributing exposure scenario controlling worker exposure for PROC 3**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 4**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for**

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## PROC 5

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 90 %).

## Number of the contributing scenario 7

### Contributing exposure scenario controlling worker exposure for PROC 8a

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario 8

### Contributing exposure scenario controlling worker exposure for PROC 8b

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario 9

### Contributing exposure scenario controlling worker exposure for PROC 9

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario 10

### Contributing exposure scenario controlling worker exposure for PROC 10

### Frequency and duration of use

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8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 11**

#### Further specification

Assessment tool used: StoffenManager

#### Frequency and duration of use

Exposure time per day: 2.5 h/d

#### Other given operational conditions affecting workers exposure

Indoor use

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

Provide extract ventilation to points where emissions occur. Provide enhanced general ventilation by mechanical means. Use in ventilated spray booths only.

#### Organisational measures to prevent /limit releases, dispersion and exposure

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 80 %) Alternatively: Use duration max. 1 h. Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

**Number of the contributing scenario** 12  
**Contributing exposure scenario controlling worker exposure for PROC 13**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor use

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

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 13  
**Contributing exposure scenario controlling worker exposure for PROC 15**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 14  
**Contributing exposure scenario controlling worker exposure for PROC 19**

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## Frequency and duration of use

8 h (full shift)

## Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Environment

PEC = predicted environmental concentration (local+regional); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 1.2E-3 mg/l; RCR: 0.02
Fresh Water (Sediment)	PEC: 0.011 mg/kg dw; RCR: 0.069
Marine Water (Pelagic)	PEC: 1.6E-4 mg/l; RCR: 0.027
Marine Water (Sediment)	PEC: 1.47E-3 mg/kg dw; RCR: 0.092
Agricultural Soil	PEC: 6.69E-4 mg/kg dw; RCR: 0.031
Sewage Treatment Plant (Effluent)	PEC: 0.01 mg/l; RCR: 0.01

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 340.4
Proc 3	EE(inhal): 425.5
Proc 4	EE(inhal): 170.2
Proc 5	EE(inhal): 170.2
Proc 8a	EE(inhal): 340.4
Proc 8b	EE(inhal): 85.11
Proc 9	EE(inhal): 340.4
Proc 10	EE(inhal): 340.4
Proc 11	EE(inhal): 0.00
Proc 13	EE(inhal): 238.3
Proc 15	EE(inhal): 170.2
Proc 19	EE(inhal): 340.4

## Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.405
Proc 3	RCR(inhal): 0.507
Proc 4	RCR(inhal): 0.203
Proc 5	RCR(inhal): 0.203
Proc 8a	RCR(inhal): 0.405
Proc 8b	RCR(inhal): 0.101
Proc 9	RCR(inhal): 0.405
Proc 10	RCR(inhal): 0.405
Proc 11	RCR(inhal): 0
Proc 13	RCR(inhal): 0.284
Proc 15	RCR(inhal): 0.203
Proc 19	RCR(inhal): 0.405

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## Number of the ES 5

Short title of the exposure scenario

### Use in Cleaning Products

#### List of use descriptors

#### Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC7: Industrial spraying

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

#### Environmental release categories [ERC]

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

#### Product characteristics

Refer to attached safety data sheets

#### Processes and activities covered by the exposure scenario

Covers the use as a component of cleaning products including transfer from storage, pouring/unloading from drums or containers. exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand), related equipment cleaning and maintenance.

#### Further explanations

Industrial use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 7

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently).

Assumes an advanced standard of occupational Health and Safety Management System

#### Contributing Scenarios

#### Number of the contributing scenario

1

#### Contributing exposure scenario controlling environmental exposure for ERC 4

#### Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 4.4a.v1 (ESVOC 8).

#### Amounts used

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Daily amount per site: 5 to

Annual amount per site: 500 to

**Frequency and duration of use**

Covers use up to: 20 days

**Other given operational conditions affecting environmental exposure**

Indoor use

**Technical conditions and measures at process level (source) to prevent release**

Release fraction to air from process: 0.5%

Release fraction to wastewater from process: 8E-3%

Release fraction to soil from process: 0%

**Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil**

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99,99 % Onsite treatment off-air.

Upgrade Systems in place or implement additional treatment. Assumed Efficiency: 99 % Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber, gas removal and/or air filtration, particle removal and/or thermal oxidation and/or vapour recovery, adsorption.

**Conditions and measures related to municipal sewage treatment plant**

Size of municipal sewage system/ treatment plant (m<sup>3</sup>/d): 2000

The minimum grade of elimination in the sewage plant is (%): 16,25

Do not apply industrial sludge to natural soils

**Number of the contributing scenario** 2

**Contributing exposure scenario controlling worker exposure for PROC 1**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3

**Contributing exposure scenario controlling worker exposure for PROC 2**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4

**Contributing exposure scenario controlling worker exposure for PROC 3**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

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**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 4**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for PROC 7**

**Further specification**

Assessment tool used: StoffenManager

**Frequency and duration of use**

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

**Other given operational conditions affecting workers exposure**

Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Room volume > 1000 m3

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

Use in ventilated spray booths only. Distance from source: > 1 m2. provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Organisational measures to prevent /limit releases, dispersion and exposure**

Clean equipment and the work area every day

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

Wear suitable gloves (tested to EN374) and eye protection. Inspect and clean equipment regularly.

**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 95 % (inhalative); 0 % (dermal).

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

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

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**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 9**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 10**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

Use suitable eye protection.

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 13**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Environment**

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 0.017 mg/l; RCR: 0.282
Fresh Water (Sediment)	PEC: 0.155 mg/kg dw; RCR: 0.972
Marine Water (Pelagic)	PEC: 1.73E-3 mg/l; RCR: 0.289
Marine Water (Sediment)	PEC: 0.016 mg/kg dw; RCR: 0.995
Agricultural Soil	PEC: 3.69E-3 mg/kg dw; RCR: 0.172
Sewage Treatment Plant (Effluent)	PEC: 0.168 mg/l; RCR: 0.168

**Human exposure prediction (oral, dermal, inhalative)**

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

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Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2
Proc 4	EE(inhal): 340.4
Proc 7	EE(inhal): 0.00
Proc 8a	EE(inhal): 85.11
Proc 8b	EE(inhal): 21.28
Proc 9	EE(inhal): 85.11
Proc 10	EE(inhal): 85.11
Proc 13	EE(inhal): 85.11

## Risk characterisation

Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values. RCR(inhal): inhalative risk characterisation ratio.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.101
Proc 3	RCR(inhal): 0.203
Proc 4	RCR(inhal): 0.405
Proc 7	RCR(inhal): < 0.01
Proc 8a	RCR(inhal): 0.101
Proc 8b	RCR(inhal): 0.025
Proc 9	RCR(inhal): 0.101
Proc 10	RCR(inhal): 0.101
Proc 13	RCR(inhal): 0.101

## Number of the ES 6

Short title of the exposure scenario

**Use in Cleaning Products**

### List of use descriptors

#### Sector of uses [SU]

SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

#### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC13: Treatment of articles by dipping and pouring

#### Environmental release categories [ERC]

ERC8a: Wide dispersive indoor use of processing aids in open systems

ERC8d: Wide dispersive outdoor use of processing aids in open systems

#### Product characteristics

Refer to attached safety data sheets

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## Processes and activities covered by the exposure scenario

Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping, automated and by hand).

## Further explanations

Professional use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 11

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes a good basic standard of occupational hygiene is implemented

## Contributing Scenarios

**Number of the contributing scenario** 1  
**Contributing exposure scenario controlling environmental exposure for ERC 8d**

### Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 8.4b.v1 (ESVOC 9).

### Amounts used

Daily amount per site: 0.000055 to

Fraction of EU tonnage used in region: 0.1

### Frequency and duration of use

Covers use up to: 365 days

### Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from wide dispersive use (regional only): 2%

Release fraction to wastewater from wide dispersive use: 1E-4%

Release fraction to soil from wide dispersive use (regional only): 0%

### Conditions and measures related to municipal sewage treatment plant

The minimum grade of elimination in the sewage plant is (%): 16.25

**Number of the contributing scenario** 2  
**Contributing exposure scenario controlling worker exposure for PROC 1**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3  
**Contributing exposure scenario controlling worker exposure for PROC 2**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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**Technical conditions and measures to control dispersion from source towards the worker**  
provide a basic standard of general ventilation (1 to 3 air changes per hour).  
**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear suitable gloves (tested to EN374) and eye protection.

**Number of the contributing scenario** 4  
**Contributing exposure scenario controlling worker exposure for PROC 3**

**Frequency and duration of use**  
8 h (full shift)  
**Other given operational conditions affecting workers exposure**  
Indoor and outdoor use  
**Technical conditions and measures to control dispersion from source towards the worker**  
provide a basic standard of general ventilation (1 to 3 air changes per hour).  
**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear suitable gloves (tested to EN374) and eye protection.

**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 4**

**Frequency and duration of use**  
8 h (full shift)  
**Other given operational conditions affecting workers exposure**  
Indoor and outdoor use  
**Technical conditions and measures to control dispersion from source towards the worker**  
provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  
**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear suitable gloves (tested to EN374) and eye protection.

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

**Frequency and duration of use**  
8 h (full shift)  
**Other given operational conditions affecting workers exposure**  
Indoor use  
**Technical conditions and measures to control dispersion from source towards the worker**  
provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation):  
80 % (inhalative); 0 % (dermal).  
**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear suitable gloves (tested to EN374) and eye protection.

**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

**Frequency and duration of use**  
8 h (full shift)  
**Other given operational conditions affecting workers exposure**  
Indoor and outdoor use  
**Technical conditions and measures to control dispersion from source towards the worker**  
provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).  
**Conditions and measures related to personal protection, hygiene and health evaluation**  
Wear suitable gloves (tested to EN374) and eye protection.

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**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 9**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 10**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 11**

**Further specification**

Assessment tool used: StoffenManager

**Frequency and duration of use**

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

**Other given operational conditions affecting workers exposure**

Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Room volume 1000 m<sup>3</sup>

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

Use in ventilated spray booths only. Distance from source: > 1 m<sup>2</sup>. provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Organisational measures to prevent /limit releases, dispersion and exposure**

Clean equipment and the work area every day

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

Wear suitable gloves (tested to EN374) and eye protection. Inspect and clean equipment regularly.

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 13**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Environment

PEC = predicted environmental concentration (local+regional); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 1.59E-4 mg/l; RCR: < 0.01
Fresh Water (Sediment)	PEC: 1.46E-3 mg/kg dw; RCR: < 0.01
Marine Water (Pelagic)	PEC: 5.59E-5 mg/l; RCR: < 0.01
Marine Water (Sediment)	PEC: 5.14E-4 mg/kg dw; RCR: 0.032
Agricultural Soil	PEC: 1.1E-4 mg/kg dw; RCR: < 0.01
Sewage Treatment Plant (Effluent)	PEC: 2.3E-8 mg/l; RCR: < 0.01

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 340.4
Proc 3	EE(inhal): 425.5
Proc 4	EE(inhal): 595.8
Proc 8a	EE(inhal): 340.4
Proc 8b	EE(inhal): 595.8
Proc 9	EE(inhal): 340.4
Proc 10	EE(inhal): 340.4
Proc 11	EE(inhal): 0.00
Proc 13	EE(inhal): 340.4

## Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.405
Proc 3	RCR(inhal): 0.507
Proc 4	RCR(inhal): 0.709
Proc 8a	RCR(inhal): 0.405
Proc 8b	RCR(inhal): 0.709
Proc 9	RCR(inhal): 0.405
Proc 10	RCR(inhal): 0.405
Proc 11	RCR(inhal): < 0.01
Proc 13	RCR(inhal): 0.405

## Number of the ES 7

Short title of the exposure scenario

**lubricants**

## List of use descriptors

### Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

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## Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC7: Industrial spraying

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC17: Lubrication at high energy conditions and in partly open process

## Environmental release categories [ERC]

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

## Product characteristics

Refer to attached safety data sheets

## Processes and activities covered by the exposure scenario

Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.

## Further explanations

Industrial use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 7

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes an advanced standard of occupational Health and Safety Management System

## Contributing Scenarios

**Number of the contributing scenario**

**1**

**Contributing exposure scenario controlling environmental exposure for ERC 4**

## Further specification

release factors for (Sp)ERC were modified.

## Amounts used

Daily amount per site: 5 to

Annual amount per site: 100 to

## Frequency and duration of use

Covers use up to: 20 days

## Other given operational conditions affecting environmental exposure

Indoor use

## Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 0.05%

Release fraction to soil from process: 0%

Release fraction to wastewater from process: 5E-3%

Do not apply industrial sludge to natural soils

## Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99,95 % Onsite treatment off-air.

Upgrade Systems in place or implement additional treatment. Assumed Efficiency: 90 % Typical measures to maintain

workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber, gas removal

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and/or air filtration, particle removal and/or thermal oxidation and/or vapour recovery, adsorption.

### Conditions and measures related to municipal sewage treatment plant

Size of industrial sewage treatment plant (m<sup>3</sup>/d): 2000

The minimum grade of elimination in the sewage plant is (%): 16,25

Do not apply industrial sludge to natural soils

**Number of the contributing scenario** 2

### Contributing exposure scenario controlling worker exposure for PROC 1

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3

### Contributing exposure scenario controlling worker exposure for PROC 2

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4

### Contributing exposure scenario controlling worker exposure for PROC 3

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5

### Contributing exposure scenario controlling worker exposure for PROC 4

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 6

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## Contributing exposure scenario controlling worker exposure for PROC 7

### Further specification

Assessment tool used: StoffenManager

### Frequency and duration of use

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

### Other given operational conditions affecting workers exposure

Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Room volume 1000 m<sup>3</sup>

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

Use in ventilated spray booths only. Distance from source: > 1 m<sup>2</sup>. provide a basic standard of general ventilation (1 to 3 air changes per hour).

### Organisational measures to prevent /limit releases, dispersion and exposure

Clean equipment and the work area every day

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

Wear suitable gloves (tested to EN374) and eye protection. Inspect and clean equipment regularly.

## Number of the contributing scenario

7

## Contributing exposure scenario controlling worker exposure for PROC 8a

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario

8

## Contributing exposure scenario controlling worker exposure for PROC 8b

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 95 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario

9

## Contributing exposure scenario controlling worker exposure for PROC 9

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

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**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 10**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 13**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 12  
**Contributing exposure scenario controlling worker exposure for PROC 17**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

**Number of the contributing scenario** 13  
**Contributing exposure scenario controlling worker exposure for PROC 17**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

Assumes process temperature up to ....

64 °C

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

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## Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 0.011 mg/l; RCR: 0.177
Fresh Water (Sediment)	PEC: 0.098 mg/kg dw; RCR: 0.611
Marine Water (Pelagic)	PEC: 1.1E-3 mg/l; RCR: 0.184
Marine Water (Sediment)	PEC: 0.01 mg/kg dw; RCR: 0.634
Agricultural Soil	PEC: 1.83E-4 mg/kg dw; RCR: < 0.01
Sewage Treatment Plant (Effluent)	PEC: 0.105 mg/l; RCR: 0.105

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2
Proc 4	EE(inhal): 340.4
Proc 7	EE(inhal): 0.00
Proc 8a	EE(inhal): 85.11
Proc 8b	EE(inhal): 21.28
Proc 9	EE(inhal): 85.11
Proc 10	EE(inhal): 85.11
Proc 13	EE(inhal): 85.11
Proc 17	EE(inhal): 595.8 - Contributing Scenario 12 EE(inhal): 170.2 - Contributing Scenario 13

## Risk characterisation

Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values. RCR(inhal): inhalative risk characterisation ratio.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.101
Proc 3	RCR(inhal): 0.203
Proc 4	RCR(inhal): 0.405
Proc 7	RCR(inhal): < 0.01
Proc 8a	RCR(inhal): 0.101
Proc 8b	RCR(inhal): 0.025
Proc 9	RCR(inhal): 0.101
Proc 10	RCR(inhal): 0.101
Proc 13	RCR(inhal): 0.101
Proc 17	RCR(inhal): 0.709 - Contributing Scenarios 12 RCR(inhal): 0.203 - Contributing Scenarios 13

## Number of the ES 8

Short title of the exposure scenario

**lubricants**

**List of use descriptors**

**Sector of uses [SU]**

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SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

## Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC17: Lubrication at high energy conditions and in partly open process

## Environmental release categories [ERC]

ERC9b: Wide dispersive outdoor use of substances in closed systems

## Product characteristics

Refer to attached safety data sheets

## Processes and activities covered by the exposure scenario

Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.

## Further explanations

Professional use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 11

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes a good basic standard of occupational hygiene is implemented

## Contributing Scenarios

**Number of the contributing scenario**

**1**

**Contributing exposure scenario controlling environmental exposure for ERC 9b**

## Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 9.6b.v1 (ESVOC 14).

## Amounts used

daily wide dispersive use: 0.000055 t/d

Fraction of EU tonnage used in region: 0.1

## Frequency and duration of use

Covers use up to: 365 days

## Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

## Technical conditions and measures at process level (source) to prevent release

Release fraction to air from wide dispersive use (regional only): 1%

Release fraction to wastewater from wide dispersive use: 1%

Release fraction to soil from wide dispersive use (regional only): 1%

## Conditions and measures related to municipal sewage treatment plant

The minimum grade of elimination in the sewage plant is (%): 16.25

**Number of the contributing scenario**

**2**

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## Contributing exposure scenario controlling worker exposure for PROC 1

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3

## Contributing exposure scenario controlling worker exposure for PROC 2

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4

## Contributing exposure scenario controlling worker exposure for PROC 3

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5

## Contributing exposure scenario controlling worker exposure for PROC 4

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

**Number of the contributing scenario** 6

## Contributing exposure scenario controlling worker exposure for PROC 8a

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

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Indoor use

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

Provide extract ventilation to points where emissions occur. Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative). If no adequate ventilation is available, respiratory protection (efficiency 803 %) must be used. provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

#### Frequency and duration of use

Avoid carrying out activities involving exposure for more than 4 hours

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 9**

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 11**

#### Further specification

Assessment tool used: StoffenManager

#### Frequency and duration of use

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

#### Other given operational conditions affecting workers exposure

Ensure that the task is not carried out by more than one worker simultaneously.

The task is not followed by a period of evaporation, drying or curing.

Room volume <100 m<sup>3</sup>

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

Distance from source: > 1 m. provide a basic standard of general ventilation (1 to 3 air changes per hour).

#### Organisational measures to prevent /limit releases, dispersion and exposure

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 80 %) Alternatively: Use duration max. 2 h.

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 11**

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## Further specification

Assessment tool used: StoffenManager

### Frequency and duration of use

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

### Other given operational conditions affecting workers exposure

Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).  
Room volume >1000 m<sup>3</sup>

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

Use in ventilated spray booths only. Distance from source: 1 m. provide a basic standard of general ventilation (1 to 3 air changes per hour).

### Organisational measures to prevent /limit releases, dispersion and exposure

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374) and eye protection.

## Number of the contributing scenario

11

### Contributing exposure scenario controlling worker exposure for PROC 11

## Further specification

Assessment tool used: StoffenManager

### Frequency and duration of use

Covers frequency up to 4-5 d/week. Exposure time per day: max. 4 h/d

### Other given operational conditions affecting workers exposure

Ensure that the task is not carried out by more than one worker simultaneously.

The task is not followed by a period of evaporation, drying or curing.

Room volume 100-1000 m<sup>3</sup>

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

Provide enhanced general ventilation by mechanical means. Effectiveness of LEV (local exhaust ventilation): 47 % (inhalative).

### Organisational measures to prevent /limit releases, dispersion and exposure

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374) and eye protection.

## Number of the contributing scenario

12

### Contributing exposure scenario controlling worker exposure for PROC 13

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario

13

### Contributing exposure scenario controlling worker exposure for PROC 17

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

Assumes process temperature up to ....

64 °C

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 95 %).

**Number of the contributing scenario** 14  
**Contributing exposure scenario controlling worker exposure for PROC 17**

### Product characteristics

Covers percentage substance in the product up to 1 %

### Frequency and duration of use

4 h (half shift)

### Other given operational conditions affecting workers exposure

Indoor use

Assumes process temperature up to ....

64 °C

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

Wear suitable gloves (tested to EN374) and eye protection. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear respiratory protection (Efficiency: 90 %).

**Number of the contributing scenario** 15  
**Contributing exposure scenario controlling worker exposure for PROC 10**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Environment

PEC = predicted environmental concentration (local+regional); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 1.82E-4 mg/l; RCR: < 0.01
Fresh Water (Sediment)	PEC: 1.67E-3 mg/kg dw; RCR: 0.01
Marine Water (Pelagic)	PEC: 5.82E-5 mg/l; RCR: < 0.01
Marine Water (Sediment)	PEC: 5.35E-4 mg/kg dw; RCR: 0.033
Agricultural Soil	PEC: 1.23E-4 mg/kg dw; RCR: < 0.01
Sewage Treatment Plant (Effluent)	PEC: 2.3E-4 mg/l; RCR: < 0.01

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 340.4
Proc 3	EE(inhal): 425.5
Proc 4	EE(inhal): 595.8
Proc 8a	EE(inhal): 340.4
Proc 8b	EE(inhal): 595.8
Proc 9	EE(inhal): 340.4

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Proc 10	EE(inhal): 340.4
Proc 11	EE(inhal): 0 - Contributing Scenario 9
	EE(inhal): 286.4 - Contributing Scenario 10
	EE(inhal): 269.1 - Contributing Scenario 11
Proc 13	EE(inhal): 340.4
Proc 17	EE(inhal): 425.5 - Contributing Scenario 13
	EE(inhal): 170.2 - Contributing Scenario 14

## Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.405
Proc 3	RCR(inhal): 0.507
Proc 4	RCR(inhal): 0.709
Proc 8a	RCR(inhal): 0.405
Proc 8b	RCR(inhal): 0.709
Proc 9	RCR(inhal): 0.405
Proc 10	RCR(inhal): 0.405
Proc 11	RCR(inhal): > 0.01 - Contributing Scenarios 9
	RCR(inhal): 0.682 - Contributing Scenarios 10
	RCR(inhal): 0.641 - Contributing Scenarios 11
Proc 13	RCR(inhal): 0.405
Proc 17	RCR(inhal): 0.507 - Contributing Scenarios 13
	RCR(inhal): 0.203 - Contributing Scenarios 14

## Number of the ES 9

Short title of the exposure scenario

**Metal working fluids / rolling oils**

### List of use descriptors

#### Sector of uses [SU]

SU3: Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

PROC7: Industrial spraying

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC10: Roller application or brushing

PROC13: Treatment of articles by dipping and pouring

PROC17: Lubrication at high energy conditions and in partly open process

#### Environmental release categories [ERC]

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

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## Product characteristics

Refer to attached safety data sheets

## Processes and activities covered by the exposure scenario

Covers the use in formulated MWFs (MWFs)/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

## Further explanations

Industrial use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 7

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes an advanced standard of occupational Health and Safety Management System

## Contributing Scenarios

### Number of the contributing scenario

1

### Contributing exposure scenario controlling environmental exposure for ERC 4

#### Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 4.7a.v1 (ESVOC 18).

#### Amounts used

Daily amount per site: 5 to

Annual amount per site: 100 to

Fraction of EU tonnage used in region: 1

#### Other given operational conditions affecting environmental exposure

Indoor use

#### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from process: 0.6%

Release fraction to wastewater from process: 1E-3%

Release fraction to soil from process: 0%

#### Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil

Onsite treatment wastewater. Apply acclimated biological treatment. Assumed Efficiency: 99 % Typical measures to maintain workplace concentrations of airborne VOCs and particulates below respective OELs: e.g. thermal wet scrubber, gas removal and/or air filtration, particle removal and/or thermal oxidation and/or vapour recovery, adsorption. Onsite treatment off-air.

Upgrade Systems in place or implement additional treatment. Assumed Efficiency: 70 %

#### Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m<sup>3</sup>/d): 2000

The minimum grade of elimination in the sewage plant is (%): 16.25

### Number of the contributing scenario

2

### Contributing exposure scenario controlling worker exposure for PROC 1

#### Frequency and duration of use

8 h (full shift)

#### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

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**Number of the contributing scenario** 3  
**Contributing exposure scenario controlling worker exposure for PROC 2**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4  
**Contributing exposure scenario controlling worker exposure for PROC 3**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 5**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for PROC 7**

**Further specification**

Assessment tool used: StoffenManager

**Frequency and duration of use**

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

**Other given operational conditions affecting workers exposure**

Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Room volume >1000 m<sup>3</sup>

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

Use in ventilated spray booths only. Distance from source: > 1 m<sup>2</sup>. provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Organisational measures to prevent /limit releases, dispersion and exposure**

Clean equipment and the work area every day

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

Wear suitable gloves (tested to EN374) and eye protection. Inspect and clean equipment regularly.

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**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 9**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 10**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 13**

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## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 12  
**Contributing exposure scenario controlling worker exposure for PROC 17**

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

**Number of the contributing scenario** 13  
**Contributing exposure scenario controlling worker exposure for PROC 17**

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

Assumes process temperature up to ....

64 °C

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 90 % (inhalative); 0 % (dermal).

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

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

## Environment

PEC = predicted environmental concentration (local); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 2.25E-3 mg/l; RCR: 0.038
Fresh Water (Sediment)	PEC: 0.021 mg/kg dw; RCR: 0.13
Marine Water (Pelagic)	PEC: 2.65E-4 mg/l; RCR: 0.044
Marine Water (Sediment)	PEC: 2.44E-3 mg/kg dw; RCR: 0.152
Agricultural Soil	PEC: 2.09E-3 mg/kg dw; RCR: 0.097
Sewage Treatment Plant (Effluent)	PEC: 0.021 mg/l; RCR: 0.021

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2

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Proc 5	EE(inhal): 85.11
Proc 7	EE(inhal): 0.00
Proc 8a	EE(inhal): 85.11
Proc 8b	EE(inhal): 425.5
Proc 9	EE(inhal): 85.11
Proc 10	EE(inhal): 85.11
Proc 13	EE(inhal): 85.11
Proc 17	EE(inhal): 595.8 - Contributing Scenario 12 EE(inhal): 170.2 - Contributing Scenario 13

## Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.101
Proc 3	RCR(inhal): 0.203
Proc 5	RCR(inhal): 0.101
Proc 7	RCR(inhal): < 0.01
Proc 8a	RCR(inhal): 0.101
Proc 8b	RCR(inhal): 0.507
Proc 9	RCR(inhal): 0.101
Proc 10	RCR(inhal): 0.101
Proc 13	RCR(inhal): 0.101
Proc 17	RCR(inhal): 0.709 - Contributing Scenarios 12 RCR(inhal): 0.203 - Contributing Scenarios 13

## Number of the ES 10

Short title of the exposure scenario

**Metal working fluids / rolling oils**

### List of use descriptors

#### Sector of uses [SU]

SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

#### Process categories [PROC]

PROC1: Use in closed process, no likelihood of exposure

PROC2: Use in closed, continuous process with occasional controlled exposure

PROC3: Use in closed batch process (synthesis or formulation)

PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities

PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC10: Roller application or brushing

PROC11: Non industrial spraying

PROC13: Treatment of articles by dipping and pouring

PROC17: Lubrication at high energy conditions and in partly open process

#### Environmental release categories [ERC]

ERC8a: Wide dispersive indoor use of processing aids in open systems

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## Product characteristics

Refer to attached safety data sheets

## Processes and activities covered by the exposure scenario

Covers the use in formulated MWFs (MWFs) including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils.

## Further explanations

Professional use

Assessment tool used:

Chesar 3.3

StoffenManager V 4 for Following PROC:

PROC 11

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently).

Assumes a basic standard of occupational Health and Safety Management System

## Contributing Scenarios

**Number of the contributing scenario** 1

**Contributing exposure scenario controlling environmental exposure for ERC 8a**

### Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 8.7c.v1 (ESVOC 20).

### Amounts used

daily wide dispersive use: 0.000055 to/d

Fraction of EU tonnage used in region: 0.0000553

### Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from wide dispersive use (regional only): 40%

Release fraction to wastewater from wide dispersive use: 5%

Release fraction to soil from wide dispersive use (regional only): 5%

### Conditions and measures related to municipal sewage treatment plant

The minimum grade of elimination in the sewage plant is (%): 16.25

**Number of the contributing scenario** 2

**Contributing exposure scenario controlling worker exposure for PROC 1**

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 3

**Contributing exposure scenario controlling worker exposure for PROC 2**

### Frequency and duration of use

8 h (full shift)

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## Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 4  
**Contributing exposure scenario controlling worker exposure for PROC 3**

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

**Number of the contributing scenario** 5  
**Contributing exposure scenario controlling worker exposure for PROC 5**

## Frequency and duration of use

4 h (half shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 6  
**Contributing exposure scenario controlling worker exposure for PROC 8a**

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 7  
**Contributing exposure scenario controlling worker exposure for PROC 8b**

## Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

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

**Number of the contributing scenario** 8  
**Contributing exposure scenario controlling worker exposure for PROC 10**

**Frequency and duration of use**

8 h (full shift)

**Other given operational conditions affecting workers exposure**

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

**Number of the contributing scenario** 9  
**Contributing exposure scenario controlling worker exposure for PROC 11**

**Further specification**

Assessment tool used: StoffenManager

**Frequency and duration of use**

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 h/d

**Other given operational conditions affecting workers exposure**

Ensure that the task is not carried out by more than one worker simultaneously.

The task is not followed by a period of evaporation, drying or curing.

Room volume < 100 m<sup>3</sup>

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

Distance from source: > 1 m<sup>2</sup>. provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Organisational measures to prevent /limit releases, dispersion and exposure**

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374) and eye protection. Wear respiratory protection (Efficiency: 80 %) Alternatively: Use duration max. 2 h.

**Number of the contributing scenario** 10  
**Contributing exposure scenario controlling worker exposure for PROC 11**

**Further specification**

Assessment tool used: StoffenManager

**Frequency and duration of use**

Covers frequency up to 4-5 d/week. Exposure time per day: 4-8 d/d

**Other given operational conditions affecting workers exposure**

Ensure that the task is being carried out outside the breathing zone of a worker (distance head-product greater than 1m).

Room volume > 1000 m<sup>3</sup>

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

Use in ventilated spray booths only. Distance from source: 1 m. provide a basic standard of general ventilation (1 to 3 air changes per hour).

**Organisational measures to prevent /limit releases, dispersion and exposure**

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374), coverall and eye protection.

**Number of the contributing scenario** 11  
**Contributing exposure scenario controlling worker exposure for PROC 11**

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## Further specification

Assessment tool used: StoffenManager

## Frequency and duration of use

Covers frequency up to 4-5 d/week. Exposure time per day: max 4h/d

## Other given operational conditions affecting workers exposure

Ensure that the task is not carried out by more than one worker simultaneously.

The task is not followed by a period of evaporation, drying or curing.

Room volume 100-1000 m<sup>3</sup>

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

Provide enhanced general ventilation by mechanical means. Effectiveness of LEV (local exhaust ventilation): 47 % (inhalative); 0 % (dermal).

## Organisational measures to prevent /limit releases, dispersion and exposure

Clean equipment and the work area every day

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

Inspect and clean equipment regularly. Wear suitable gloves (tested to EN374) and eye protection.

## Number of the contributing scenario

12

## Contributing exposure scenario controlling worker exposure for PROC 13

## Frequency and duration of use

8 h (full shift)

## Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario

13

## Contributing exposure scenario controlling worker exposure for PROC 17

## Frequency and duration of use

8 h (full shift)

## Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

## Number of the contributing scenario

14

## Contributing exposure scenario controlling worker exposure for PROC 17

## Frequency and duration of use

1 h per shift

## Other given operational conditions affecting workers exposure

Indoor use

Assumes process temperature up to ....

< 64 °C

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation): 80 % (inhalative); 0 % (dermal).

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

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

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## Environment

PEC = predicted environmental concentration (local+regional); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 2.74E-4 mg/l; RCR: < 0.01
Fresh Water (Sediment)	PEC: 2.52E-3 mg/kg dw; RCR: 0.016
Marine Water (Pelagic)	PEC: 6.74E-5 mg/l; RCR: 0.011
Marine Water (Sediment)	PEC: 6.2E-4 mg/kg dw; RCR: 0.039
Agricultural Soil	PEC: 1.72E-4 mg/kg dw; RCR: < 0.01
Sewage Treatment Plant (Effluent)	PEC: 1.15E-3 mg/l; RCR: < 0.01

## Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 340.4
Proc 3	EE(inhal): 425.5
Proc 5	EE(inhal): 340.4
Proc 8a	EE(inhal): 340.4
Proc 8b	EE(inhal): 595.8
Proc 10	EE(inhal): 340.4
Proc 11	EE(inhal): 0.00 - Contributing Scenario 9 EE(inhal): 286.4 - Contributing Scenario 10 EE(inhal): 269.1 - Contributing Scenario 11
Proc 13	EE(inhal): 340.4
Proc 17	EE(inhal): 680.9 - Contributing Scenario 13 EE(inhal): 680.9 - Contributing Scenario 14

## Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 1	RCR(inhal): < 0.01
Proc 2	RCR(inhal): 0.405
Proc 3	RCR(inhal): 0.507
Proc 5	RCR(inhal): 0.405
Proc 8a	RCR(inhal): 0.405
Proc 8b	RCR(inhal): 0.709
Proc 10	RCR(inhal): 0.405
Proc 11	RCR(inhal): < 0.01 - Contributing Scenarios 9 RCR(inhal): 0.682 - Contributing Scenarios 10 RCR(inhal): 0.641 - Contributing Scenarios 11
Proc 13	RCR(inhal): 0.405
Proc 17	RCR(inhal): 0.811 - Contributing Scenarios 13 RCR(inhal): 0.811 - Contributing Scenarios 14

## Number of the ES 11

Short title of the exposure scenario

## Use in laboratories

## List of use descriptors

## Sector of uses [SU]

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SU22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

## Process categories [PROC]

PROC10: Roller application or brushing  
PROC15: Use as laboratory reagent

## Environmental release categories [ERC]

ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

## Product characteristics

Refer to attached safety data sheets

## Processes and activities covered by the exposure scenario

Use of the substance within laboratory settings, including material transfers and equipment cleaning

## Further explanations

Professional use

Assessment tool used:

Chesar 3.3

liquid

Assumes use at not more than 20°C above ambient temperature (unless stated differently)

Covers percentage substance in the product up to 100 % (unless stated differently)

Assumes a basic standard of occupational Health and Safety Management System

## Contributing Scenarios

<b>Number of the contributing scenario</b>	<b>1</b>
<b>Contributing exposure scenario controlling environmental exposure for ERC 8a</b>	

### Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 8.17.v1 (ESVOC 39).

### Amounts used

daily wide dispersive use: 0.000055 to/d

Fraction of Regional tonnage used locally: 0.1

### Other given operational conditions affecting environmental exposure

Indoor/Outdoor use

### Technical conditions and measures at process level (source) to prevent release

Release fraction to air from wide dispersive use (regional only): 50%

Release fraction to wastewater from wide dispersive use: 50%

Release fraction to soil from wide dispersive use (regional only): 0%

### Conditions and measures related to municipal sewage treatment plant

The minimum grade of elimination in the sewage plant is (%): 16.253

<b>Number of the contributing scenario</b>	<b>2</b>
<b>Contributing exposure scenario controlling worker exposure for PROC 10</b>	

### Frequency and duration of use

4 h (half shift)

### Other given operational conditions affecting workers exposure

Indoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour). Effectiveness of LEV (local exhaust ventilation):

80 % (inhalative); 0 % (dermal).

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

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

<b>Number of the contributing scenario</b>	<b>3</b>
<b>Contributing exposure scenario controlling worker exposure for</b>	

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## PROC 15

### Frequency and duration of use

8 h (full shift)

### Other given operational conditions affecting workers exposure

Indoor and outdoor use

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

provide a basic standard of general ventilation (1 to 3 air changes per hour).

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

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

### Environment

PEC = predicted environmental concentration (local+regional); RCR = risk characterisation ratio

Fresh Water (Pelagic)	PEC: 1.31E-3 mg/l; RCR: 0.022
Fresh Water (Sediment)	PEC: 0.012 mg/kg dw; RCR: 0.075
Marine Water (Pelagic)	PEC: 1.71E-4 mg/l; RCR: 0.029
Marine Water (Sediment)	PEC: 1.57E-3 mg/kg dw; RCR: 0.098
Agricultural Soil	PEC: 7.31E-4 mg/kg dw; RCR: 0.034
Sewage Treatment Plant (Effluent)	PEC: 0.012 mg/l; RCR: 0.012

### Human exposure prediction (oral, dermal, inhalative)

Oral exposure is not expected to occur. Exposure estimates are given for either short-term or long-term exposure depending on which lead to more conservative risk characterisation ratios. The RMMs described above suffice to control risks for both local and systemic effects. EE(inhal): Estimated inhalative exposure [mg/m<sup>3</sup>].

Proc 10	EE(inhal): 340.4
Proc 15	EE(inhal): 170.2

### Risk characterisation

RCR(inhal): inhalative risk characterisation ratio. Where required local and systemic effects were evaluated both for short-term and long-term exposure. The RCR's given correspond in each case to the most conservative calculated values.

Proc 10	RCR(inhal): 0.405
Proc 15	RCR(inhal): 0.203

### Guidance to Downstream User to evaluate whether he works inside the boundaries set by the ES

Usage of release factors allows downstream users to verify in a first approximation, if the combination of local usage and production conditions meets the defined release quantities resulting from this exposure scenario (calculated as M(site) [see amounts used, contributing scenario 1] x release factor [Technical conditions and measures at process level (source) to prevent release; contributing scenario 1])

For specific information regarding the SPERC used please refer to the ESIG webpage  
<https://www.esig.org/reach-ges/environment/>

### associated uses:

Should consumer uses be associated with this exposure scenario, please contact OQ for further details  
Other combinations of operational conditions may also be safe. Please contact OQ in case your local operational conditions differ from the ones described above and you are unsure if they are also safe