

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended



n-Propyl acetate
10580

Version / Revision 4
Supersedes Version 3.00***

Revision Date 27-Oct-2022
Issuing date 27-Oct-2022

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
Registration number (REACH) 01-2119484620-39

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

National emergency telephone number National Poisons Information Centre
+353 (0)1 809 2166
available to the public 8 am - 10 pm
+353 (0)1 809 2566
available 24/7 for medical professionals

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

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Serious eye damage/eye irritation Category 2, H319
Target Organ Systemic Toxicant - Single exposure Category 3, H336

Additional information

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)

Endocrine disrupting assessments

The substance is not listed on the candidate list according to Art. 59(1), REACH. The substance was not assessed as having endocrine disrupting properties according to regulation 2017/2100/EU or 2018/605/EU.

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SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	REACH-No	1272/2008/EC	Concentration (%)
Propyl acetate	109-60-4	01-2119484620-39	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336 EU H066	> 99,5

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. Aerate 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 (CO₂), water spray

Unsuitable Extinguishing Media

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

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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 (CO₂)
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
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.

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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.

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 Ireland

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Ireland OELs

Component	TWA (mg/m ³)	TWA (ppm)	STEL (mg/m ³)	STEL (ppm)	Skin Absorption	Sensitizer
Propyl acetate CAS: 109-60-4		100		150		

Notes

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 ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	840 mg/m ³
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 ³
DN(M)EL - acute / short-term exposure - systemic effects - Inhalation	298 mg/m ³
DN(M)EL - long-term exposure - local effects - Inhalation	210 mg/m ³
DN(M)EL - acute / short-term exposure - local effects - Inhalation	420 mg/m ³
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

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8.2. Exposure controls

Special adaptations (REACH)

Not applicable.

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.

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

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

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annex to this safety data sheet.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Colour	colourless
Odour	fruity
Odour threshold	No data available
Melting point/freezing point	< -90 °C
Method	DIN ISO 3016
Boiling point or initial boiling point and boiling range	102 °C @ 1013 hPa
Method	OECD 103
Flammability	Ignitable
Lower explosion limit	2 Vol %
Upper explosion limit	8 Vol %
Flash point	12 °C
Method	EU A.9
Autoignition temperature	380 °C @ 1013 hPa
Method	DIN 51794
Decomposition temperature	No data available
pH	No data available
Kinematic Viscosity	0,653 mm ² /s @ 20 °C***
Method	ASTM D445***
Solubility	18,7 g/l @ 20 °C, in water
Partition coefficient n-octanol/water (log value)	1,4 @ 25 °C (77 °F) OECD 117
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	
Density and/or relative density	
Values @ °C @ °F Method	
0,888 20 68 DIN 51757	
Relative vapour density	3,5 (Air = 1) @ 20 °C (68 °F)
Particle characteristics	not applicable

9.2. Other information

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
Molecular weight	102,13
Molecular formula	C ₅ H ₁₀ O ₂
log K _{oc}	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
Evaporation rate	No data available

SECTION 10: Stability and Reactivity

10.1. Reactivity

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

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 hazard classes as defined in Regulation (EC) No 1272/2008

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

Acute toxicity				
Propyl acetate (109-60-4)				
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

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Propyl acetate (109-60-4)				
Target Organ Effects	Species	Evaluation	Method	
Skin	guinea pig	not sensitizing	Maximisation Test	read across

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: \geq 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	rat, 1.		OECD 416	read across

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	ppm	Generation, male/female rat 2. Generation, male/female		Inhalation	
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

11.2. Information on other hazards

Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

Propyl acetate, CAS: 109-60-4

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	
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Aquatic toxicity	Pseudokirchneriella subcapitata	NOEC: 83,2 mg/l (3d)	OECD 201	
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12.2. Persistence and degradability

Propyl acetate, CAS: 109-60-4

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. Endocrine disrupting properties

The substance has not been identified as having endocrine disrupting properties in accordance with section 2.3.

12.7. Other adverse effects

Propyl acetate, CAS: 109-60-4

No data available

SECTION 13: Disposal considerations

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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

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

SECTION 14: Transport information

ADR/RID

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

ADN

ADN Container

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

ADN

ADN Tanker

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

ICAO-TI / IATA-DGR

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

IMDG

14.1. UN number or ID number	UN 1276
14.2. UN proper shipping name	Propyl acetate
14.3. Transport hazard class(es)	3
14.4. Packing group	II
14.5. Environmental hazards	no
14.6. Special precautions for user	
EmS	F-E, S-D
14.7. Maritime transport in bulk according to IMO instruments	***
Product name	n-Propyl acetate
Ship type	3
Pollution category	Y
Hazard class	P***

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

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

DI 2012/18/EU (Seveso III)

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

Component	Status
Propyl acetate CAS: 109-60-4	regulated

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International Inventories

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AICS (AU)
DSL (CA)
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)

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

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.

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).

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 Chemicals 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

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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):

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

Number of the ES 1

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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

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%

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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 (m³/d): 2000

Water flow in sewage/river (m³/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

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

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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.

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

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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/m³]. 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.

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
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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

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

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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 (m³/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

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.

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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 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.

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

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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/m³].

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
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

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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

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

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 %

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Conditions and measures related to municipal sewage treatment plant

Size of municipal sewage system/ treatment plant (m³/d): 2000
Water flow in sewage/river (m³/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

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 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): 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

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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

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.

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/m³].

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

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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)

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

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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%

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

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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 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 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

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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

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).

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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

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/m³].

Proc 1

EE(inhal): 0.17

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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

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

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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

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 (m³/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

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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
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.

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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). 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.

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

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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/m³].

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

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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

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

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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

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 5

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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.

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

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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

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

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/m³].

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.

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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

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

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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 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 (m³/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

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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 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)

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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.

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).

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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: 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/m³].

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

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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]

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**

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Further specification

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

Amounts used

daily wide dispersive use: 0.000055 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): 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
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

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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 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

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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 m³

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

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 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 m³

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):

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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

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

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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/m³].

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 - 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)

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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

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 (m³/d): 2000

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 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

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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).

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

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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). 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.

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

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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/m³].

Proc 1	EE(inhal): 0.17
Proc 2	EE(inhal): 85.11
Proc 3	EE(inhal): 170.2
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

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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

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.

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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

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

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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 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 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 m³

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

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

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 m³

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.

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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 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 m³

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

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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: 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/m³].

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

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended



n-Propyl acetate
10580

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List of use descriptors

Sector of uses [SU]

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

Number of the contributing scenario

1

Contributing exposure scenario controlling environmental exposure for ERC 8a

Further specification

Specific Environmental Release Categories [SPERC], SpERC ESVOC 8.17.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

Number of the contributing scenario

2

Contributing exposure scenario controlling worker exposure for PROC 10

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.

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006 (REACH) Article 31, Annex II as amended



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Number of the contributing scenario 3
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+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/m³].

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