

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006



ANDEROL 497

Version 1.0 Revision Date: 11.10.2023 SDS Number: 203000014930 Date of last issue: -
Country / Language: DE / 6N (EN)

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

1.1 Product identifier

Trade name : ANDEROL 497
Product code : 000000000062597727

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

Use of the Substance/Mixture : Lubricant, Additive
Recommended restrictions on use : Reserved for industrial and professional use.

1.3 Details of the supplier of the safety data sheet

Company : Anderol B.V.
Groot Egtenrayseweg 23
5928 PA Venlo
Netherlands
+31 77 396 0340
Responsible Department : +49 221 8885 2288
infosds@lanxess.com

1.4 Emergency telephone number

Emergency telephone number : For 24/7 multilingual emergency please call
CHEMTREC EMEA: +44 20 3885 0382 and mention CCN
1001748.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Long-term (chronic) aquatic hazard, Category 3 H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard statements : H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**

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P273 Avoid release to the environment.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Additional Labelling

EUH208 Contains N-1-naphthylaniline. May produce an allergic reaction.

2.3 Other hazards

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

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

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

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
N-1-naphthylaniline	90-30-2 201-983-0 01-2119488704-27	Acute Tox. 4; H302 Skin Sens. 1B; H317 STOT RE 2; H373 (Blood, Kidney) Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1 Acute toxicity estimate Acute oral toxicity:	>= 0,25 - < 1

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		1.625 mg/kg	
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For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
If potential for exposure exists refer to Section 8 for specific personal protective equipment.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : Wash off with soap and water.
Get medical attention if symptoms occur.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Get medical attention if symptoms appear.
- If swallowed : Rinse mouth with water.
Do not induce vomiting unless directed to do by medical personnel.
Get medical attention if symptoms occur.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : Get medical attention if symptoms appear.
- Risks : No information available.

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : For specialist advice physicians should contact the Poisons Information Service.
Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry powder

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Sand
Water mist

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Carbon dioxide (CO₂)
Carbon monoxide

5.3 Advice for firefighters

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

Further information : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire.
No action shall be taken involving any personal risk or without suitable training.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : No action shall be taken involving any personal risk or without suitable training.
Put on appropriate personal protection equipment.
Do not touch or walk through spilt material.
Evacuate unnecessary personnel.
Keep unnecessary and unprotected personnel from entering.

6.2 Environmental precautions

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

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Stop leak if safe to do so.
Move containers from spill area.
Wash spillages into an effluent treatment plant or proceed as follows.
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).
Dispose of wastes in an approved waste disposal facility.
Do not allow into the sewerage system, surface waters or

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groundwater or into the soil.

6.4 Reference to other sections

Refer to protective measures listed in sections 7 and 8., For disposal considerations see section 13.

SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Annex should be consulted for any available use-specific information provided in the Exposure Scenario(s).

7.1 Precautions for safe handling

- Advice on safe handling : Remove contaminated clothing and protective equipment before entering eating areas. Workers should wash hands and face before eating, drinking and smoking. Put on appropriate personal protection equipment. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed.
- Advice on protection against fire and explosion : Normal measures for preventive fire protection.
- Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep containers sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate container to avoid environmental contamination.
- Storage class (TRGS 510) : 10, Combustible liquids
- Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

- Specific use(s) : Raw material for industry

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SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. The list of Identified Uses in Annex should be consulted for any available use-specific information provided in the Exposure Scenario(s).

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
N-1-naphthylaniline	90-30-2	AGW (Inhalable fraction)	2 mg/m ³	DE TRGS 900
Peak-limit: excursion factor (category): 2;(II)				
Further information: When there is compliance with the OEL and biological tolerance values, there is no risk of harming the unborn child, Substance sensitizing through the skin				

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

Substance name	End Use	Exposure routes	Potential health effects	Value
N-1-naphthylaniline	Workers	Inhalation	Long-term exposure, Systemic effects	0,08 mg/m ³
	Workers	Inhalation	Short-term exposure, Systemic effects	44 mg/m ³
	Workers	Dermal	Long-term exposure, Systemic effects	0,02 mg/kg bw/day
	Workers	Dermal	Short-term exposure, Systemic effects	6,67 mg/kg bw/day
	Consumers	Inhalation	Long-term exposure, Systemic effects	0,015 mg/m ³
	Consumers	Inhalation	Short-term exposure, Systemic effects	33 mg/m ³
	Consumers	Dermal	Long-term exposure, Systemic effects	0,008 mg/kg bw/day
	Consumers	Dermal	Short-term exposure, Systemic effects	3,33 mg/kg bw/day
	Consumers	Oral	Long-term exposure, Systemic effects	0,008 mg/kg bw/day
	Consumers	Oral	Short-term exposure, Systemic effects	2 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
N-1-naphthylaniline	Fresh water	0,0002 mg/l
	Marine water	0,00002 mg/l
	Sewage treatment plant	100 mg/l
	Fresh water sediment	0,0344 mg/kg dry

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		weight (d.w.)
	Marine sediment	0,00344 mg/kg dry weight (d.w.)
	Soil	0,0068 mg/kg dry weight (d.w.)
	Secondary Poisoning	7,173 mg/kg food

8.2 Exposure controls

Engineering measures

Good general ventilation should be sufficient to control worker exposure to airborne contaminants.

Personal protective equipment

Eye/face protection : Eye wash bottle with pure water

Safety glasses with side-shields conforming to EN166

Hand protection

Remarks

: Polyvinyl alcohol or nitrile- butyl-rubber gloves Before removing gloves clean them with soap and water. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Request information on glove permeation properties from the glove supplier.

The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Skin and body protection

: Wear suitable protective clothing.
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection

: No personal respiratory protective equipment normally required.

In the case of vapour formation use a respirator with an approved filter.

In the case of dust or aerosol formation use respirator with an approved filter.

Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Respirator with combination filter for vapour/particulate (EN 141)

Filter type

: Filter type AB-P

Protective measures

: Please follow all applicable local/national requirements when

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selecting protective measures for a specific workplace.
These recommendations apply to the product as supplied.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	:	oily
Physical state	:	liquid
Colour	:	light yellow
Odour	:	ester-like
Odour Threshold	:	Not relevant
Pour point	:	-42 °C
Boiling point/boiling range	:	No data available
Flammability	:	No data available
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	248 °C
Ignition temperature	:	No data available
Decomposition temperature	:	No data available
Self-Accelerating decomposition temperature (SADT)	:	GLP: No information available.
pH	:	Not applicable
Viscosity		
Viscosity, dynamic	:	5,6 - 74,8 mPa,s (40 - 100 °C) Method: ASTM D 445
Viscosity, kinematic	:	70,8 mm ² /s (40 °C) Method: ASTM D 445
Solubility(ies)		
Water solubility	:	No data available

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Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Vapour pressure : No data available

Relative density : 0,949 (15 °C)

Density : 0,949 g/cm³ (15 °C)

Relative vapour density : No data available

9.2 Other information

Explosives : No data available

Oxidizing properties : No data available

Flammability (liquids) : No data available

Self-ignition : No data available

Self-heating substances : No data available

Metal corrosion rate : Not corrosive to metals

Evaporation rate : No data available

Miscibility with water : No data available

Molecular weight : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Hazardous reactions : No dangerous reaction known under conditions of normal use. Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid

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Conditions to avoid : Exposure to air or moisture over prolonged periods.
Direct sources of heat.
Strong sunlight for prolonged periods.

10.5 Incompatible materials

Materials to avoid : Strong oxidizing agents
Strong acids and strong bases

10.6 Hazardous decomposition products

Hazardous decomposition products : Carbon dioxide (CO₂), carbon monoxide (CO), oxides of nitrogen (NO_x), dense black smoke.

SECTION 11: Toxicological information

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

Acute toxicity

Not classified based on available information.

Components:

N-1-naphthylaniline:

Acute oral toxicity : LD50 (Rat, male): 1.625 mg/kg
Acute dermal toxicity : LD50 (Rabbit, male): > 5.000 mg/kg

Skin corrosion/irritation

Not classified based on available information.

Components:

N-1-naphthylaniline:

Species : Rabbit
Method : OECD Test Guideline 404
Result : No skin irritation
GLP : no

Serious eye damage/eye irritation

Not classified based on available information.

Components:

N-1-naphthylaniline:

Species : Rabbit
Method : OECD Test Guideline 405
Result : No eye irritation
GLP : no

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Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

N-1-naphthylaniline:

Test Type : Maximisation Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : The product is a skin sensitiser, sub-category 1B.
GLP : no

Germ cell mutagenicity

Not classified based on available information.

Components:

N-1-naphthylaniline:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: No information available.

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: No information available.

Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: No information available.

Genotoxicity in vivo : Test Type: dominant lethal test
Species: Mouse (male)
Application Route: Intraperitoneal
Method: OECD Test Guideline 478
Result: negative
GLP: No information available.

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Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

Components:

N-1-naphthylaniline:

Effects on foetal development : Test Type: Pre-natal
Species: Rat, female
Application Route: Oral
Dose: 15 - 50 - 150 milligram per kilogram
General Toxicity Maternal: NOAEL: 50 mg/kg bw/day
Developmental Toxicity: NOAEL: 150 mg/kg bw/day
Method: OECD Test Guideline 414
GLP: yes

STOT - single exposure

Not classified based on available information.

STOT - repeated exposure

Not classified based on available information.

Components:

N-1-naphthylaniline:

Exposure routes : Oral
Target Organs : Blood, Kidney
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

N-1-naphthylaniline:

Species : Rat, male and female
LOAEL : 5 mg/kg
Application Route : Oral
Exposure time : 90 d
Number of exposures : daily
Dose : 5 - 25 - 125 mg/kg bw/day
Method : OECD Test Guideline 408
GLP : yes
Target Organs : Blood, Kidney
Assessment : The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.
Remarks : Subchronic toxicity

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Aspiration toxicity

Not classified based on available information.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

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

Further information

Product:

Remarks : The product itself has not been tested.

SECTION 12: Ecological information

12.1 Toxicity

Components:

N-1-naphthylaniline:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0,44 mg/l
Exposure time: 96 h
Analytical monitoring: no
Remarks: nominal concentration

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0,3 mg/l
End point: Immobilization
Exposure time: 48 h
Analytical monitoring: no
Remarks: nominal concentration

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 0,93 mg/l
End point: Growth rate
Exposure time: 96 h
Analytical monitoring: no
Remarks: nominal concentration

M-Factor (Acute aquatic toxicity) : 1

Toxicity to microorganisms : EC50 (activated sludge): > 10.000 mg/l
End point: Respiration inhibition
Exposure time: 3 h
Method: OECD Test Guideline 209

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0,032 mg/l
End point: Reproduction
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Analytical monitoring: no
Method: OECD Test Guideline 211
GLP: yes
Remarks: nominal concentration

M-Factor (Chronic aquatic toxicity) : 1

12.2 Persistence and degradability

Components:

N-1-naphthylaniline:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 14 d
Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

Components:

N-1-naphthylaniline:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 56 d
Bioconcentration factor (BCF): ≥ 427
Method: OECD Test Guideline 305C

Partition coefficient: n-octanol/water : log Pow: 4,28

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components consid-

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ered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Harmful to aquatic life.
Harmful to aquatic life with long lasting effects.
The product itself has not been tested.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. The list of Identified Uses in Annex should be consulted for any available use-specific information provided in the Exposure Scenario(s).

13.1 Waste treatment methods

Product : The generation of waste should be avoided or minimised wherever possible.
This material and its container must be disposed of in a safe way.
Empty containers retain product residue; observe all precautions for product.
Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.
Wastedisposal should be in accordance with existing federal state, provincial and or local environmental controls

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Empty containers should be taken to an approved waste handling site for recycling or disposal.

SECTION 14: Transport information

14.1 UN number or ID number

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

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14.2 UN proper shipping name

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

14.3 Transport hazard class(es)

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

14.4 Packing group

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

14.5 Environmental hazards

Not regulated as a dangerous good

14.6 Special precautions for user

Hazard and Handling Notes. : Not dangerous cargo.
Keep separated from foodstuffs.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

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

2-naphthylamine (Number on list 75, 43, 28, 12)

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- International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors : Not applicable
- REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).
- Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable
- Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable
- Council Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors. : Neither banned nor restricted
- Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable
- REACH - List of substances subject to authorisation (Annex XIV) : Not applicable
- Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable
- Water hazard class (Germany) : WGK 1 slightly hazardous to water
Classification according to AwSV, Annex 1 (5)

15.2 Chemical safety assessment

No information available.

SECTION 16: Other information

Full text of H-Statements

- H302 : Harmful if swallowed.
H317 : May cause an allergic skin reaction.
H373 : May cause damage to organs through prolonged or repeated
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H400 : exposure if swallowed.
H400 : Very toxic to aquatic life.
H410 : Very toxic to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox. : Acute toxicity
Aquatic Acute : Short-term (acute) aquatic hazard
Aquatic Chronic : Long-term (chronic) aquatic hazard
Skin Sens. : Skin sensitisation
STOT RE : Specific target organ toxicity - repeated exposure
DE TRGS 900 : Germany. TRGS 900 - Occupational exposure limit values.
DE TRGS 900 / AGW : Time Weighted Average

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

Further information

Classification of the mixture:

Aquatic Chronic 3 H412

Classification procedure:

Calculation method

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The data contained in this Safety Data Sheet are based on our current knowledge and experience and describe the product only with regard to safety requirements. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered to be a guidance for processing and does not contain any warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. It is the responsibility of the recipient of the product to ensure that any proprietary rights and existing laws and legislation are observed.

Relevant changes from the previous version are marked on the left side of the Safety Data Sheet with a black double bar in appropriate places.

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Annex

Exposure Scenario (ES)

Number	Title
ES1	Formulation of preparations, Lubricants, greases, release products (ERC2; PROC15; PROC9; PROC8b; PROC8a; PROC5; PROC4; PROC3; PROC2; PROC1; PC17; PC24; PC25; SU8) <u>Structured Short Title:</u> Formulation or re-packing.
ES2	General exposures, Lubricants, greases, release products, Engine lubricant service (ERC4; PROC1; PROC2; PROC8b; PROC9; PC17; PC24) <u>Structured Short Title:</u> Use at industrial sites.
ES3	General exposures, Lubricants, greases, release products, Engine lubricant service, Indoor use (ERC9a; PROC1; PROC2; PROC8a; PROC8b; PROC20; PC17; PC24; SU22) <u>Structured Short Title:</u> Widespread use by professional workers.
ES4	General exposures, Lubricants, greases, release products, Engine lubricant service, Outdoor use (ERC9b; PROC1; PROC2; PROC8a; PROC8b; PROC20; PC17; PC24; SU22) <u>Structured Short Title:</u> Widespread use by professional workers.
ES5	General exposures (open systems), Use of lubricants and greases, Corrosion inhibitors, Rolling, Brushing, Dipping, Spraying (ERC4; PROC13; PROC10; PROC9; PROC8b; PROC2; PROC1; PC24) <u>Structured Short Title:</u> Use at industrial sites.
ES6	General exposures (open systems), Use of lubricants and greases, Corrosion inhibitors, Rolling, Brushing, Dipping, Spraying, Indoor use (ERC8a; PROC1; PROC2; PROC8a; PROC10; PROC13; PC24; SU 22) <u>Structured Short Title:</u> Widespread use by professional workers.
ES7	Outdoor use, Spraying, Dipping, Rolling, Brushing, Corrosion inhibitors, Use of lubricants and greases, General exposures (open systems) (ERC8d; PROC1; PROC2; PROC10; PC24; SU 22) <u>Structured Short Title:</u> Widespread use by professional workers.
ES8	Treatment by heating, Lubricants, greases, release products, (open systems) (ERC4;

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PROC1; PROC2; PROC8b; PROC13; PC17; PC24)

Structured Short Title:
Use at industrial sites.

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ES1: Formulation of preparations, Lubricants, greases, release products

1.1. Title section

Structured Short Title	: Formulation or re-packing.
Environmental release category(ies)	: ERC2: Formulation of preparations
Process category(ies)	: PROC15: Use as laboratory reagent PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC8b: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at dedicated facilities PROC8a: Transfer of substance or preparation (charging/discharging) from/ to vessels/ large containers at non-dedicated facilities PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC3: Use in closed batch process (synthesis or formulation) PROC2: Use in closed, continuous process with occasional controlled exposure PROC1: Use in closed process, no likelihood of exposure
Product (sub) category(ies)	: PC17: Hydraulic fluids PC24: Lubricants, greases, release products PC25: Metal working fluids
Sector(s) of use	: SU8: Manufacture of bulk, large scale chemicals (including petroleum products)

Contributing Scenario (CS) Environment		
CS1	Formulation of preparations	ERC2

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2

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CS4	Use in closed batch process (synthesis or formulation)	PROC3
CS5	Use in batch and other process (synthesis) where opportunity for exposure arises	PROC4
CS6	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)	PROC5
CS7	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS8	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS10	Use as laboratory reagent	PROC15

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation of preparations (ERC2)

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	: 233,33 kg
Annual amount per site	: 70000 kg
Release type	: Intermittent use/release
Emission days per year	: 300

Technical and organisational conditions and measures
Product must not be released into water without pre-treatment.
Suitable technique(s) to limit releases to soil: No specific measures identified. No incorporation in soil

Conditions and measures related to sewage treatment plant	
STP type	: Municipal sewage treatment plant
STP effluent	: 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)

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Waste disposal methods : Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure

Receiving surface water flow	: 18.000 m ³ /d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100
Emission or Release Factor: Air	: Worst case assumption 0,005 %
Emission or Release Factor: Water	: Worst case assumption 0 %
Emission or Release Factor: Soil	: Worst case assumption 0 %

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

Product (article) characteristics

Concentration of substance in product	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical form of product	: Liquid substance
Vapour pressure	: < 10 hPa

Amount used, frequency and duration of use (or from service life)

Duration	: Exposure duration < 480 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently). 5 days/week

Technical and organisational conditions and measures

Handle substance within a closed system.
Provide a basic standard of general ventilation (1 to 3 air changes per hour).

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 95 %

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Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
	: Assumes a good basic standard of occupational hygiene is implemented

1.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics	
Concentration of substance in product	: Covers concentrations up to 27 %
Physical form of product	: Liquid substance
Vapour pressure	: < 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 480 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently). 5 days/week

Technical and organisational conditions and measures	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	
Handle substance within a closed system. Use only in area provided with appropriate exhaust ventilation. Inhalation - minimum efficiency of 90 %	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)

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: Assumes a good basic standard of occupational hygiene is implemented

1.2.4. Control of worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

Product (article) characteristics	
Concentration of substance in product	: Covers concentrations up to 27 %
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently). 5 days/week

Technical and organisational conditions and measures	
Provide extraction ventilation at points where emissions occur. Inhalation - minimum efficiency of 90 %	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
: Assumes a good basic standard of occupational hygiene is implemented	

1.2.5. Control of worker exposure: Use in batch and other process (synthesis) where opportunity for exposure arises (PROC4)

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Product (article) characteristics	
Concentration of substance in product	: Covers concentrations up to 27 %
Physical form of product	: Liquid mixture
Vapour pressure	: < 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min
Use frequency	: 5 days/week

Technical and organisational conditions and measures	
Provide extraction ventilation at points where emissions occur. Inhalation - minimum efficiency of 90 %	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Dermal - minimum efficiency of 98 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Limit the substance content in the product to 10 %.
Physical form of product	: Liquid mixture

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Vapour pressure	: < 10 hPa
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Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min
Use frequency	: 5 days/week

Technical and organisational conditions and measures	
Provide extraction ventilation at points where emissions occur. Inhalation - minimum efficiency of 90 %	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Dermal - minimum efficiency of 98 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical form of product	: Solid, low dustiness

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 60 min
Use frequency	: 5 days/week

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Country / Language: DE / 6N (EN)

Technical and organisational conditions and measures

Provide extraction ventilation at points where emissions occur.
Inhalation - minimum efficiency of 90 %

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Dermal - minimum efficiency of 98 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor

Body parts exposed : Assumes that potential dermal contact is limited to hands.

: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

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

Physical form of product : Solid, low dustiness

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration < 60 min

Use frequency : 5 days/week

Technical and organisational conditions and measures

Provide extraction ventilation at points where emissions occur.
Inhalation - minimum efficiency of 95 %

General standard operating procedures to control routine activities

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Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Dermal - minimum efficiency of 98 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor
Body parts exposed : Assumes that potential dermal contact is limited to hands.
: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers concentrations up to 27 %
Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration < 240 min

Technical and organisational conditions and measures

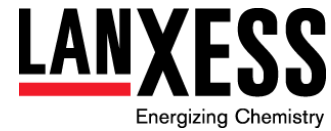
Provide extraction ventilation at points where emissions occur.
Inhalation - minimum efficiency of 90 %
General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Dermal - minimum efficiency of 98 %

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Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 100 % (unless stated differently).
Physical form of product	: Solid, low dustiness

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min

Technical and organisational conditions and measures	
Provide extraction ventilation at points where emissions occur. Inhalation - minimum efficiency of 90 %	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
	: Assumes a good basic standard of occupational hygiene is implemented

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1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation of preparations (ERC2)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,000007 mg/L (EASY TRA v4.1)	0,033
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,034
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Sewage treatment plant	< 0,0000001 mg/L (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,091 mg/m ³ (EASY TRA v4.1)	0,508
dermal	systemic	long-term	0,002 mg/kg bw/day (EASY TRA v4.1)	0,034

1.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,01 mg/m ³ (ECETOC TRA worker v3)	0,054
dermal	systemic	long-term	0,019 mg/kg bw/day (ECETOC)	0,37

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			TRA worker v3)	
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1.3.4. Worker exposure: Use in closed batch process (synthesis or formulation) (PROC3)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,091 mg/m ³ (ECETOC TRA worker v3)	0,508
dermal	systemic	long-term	0,009 mg/kg bw/day (ECETOC TRA worker v3)	0,185

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,055 mg/m ³ (ECETOC TRA worker v3)	0,305
dermal	systemic	long-term	0,022 mg/kg bw/day (ECETOC TRA worker v3)	0,444

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,033 mg/m ³ (ECETOC TRA worker v3)	0,183
dermal	systemic	long-term	0,016 mg/kg bw/day (ECETOC TRA worker v3)	0,329

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,01 mg/m ³ (EASY TRA v4.1)	0,056
dermal	systemic	long-term	0,017 mg/kg bw/day (RISKOFDERM v2.1)	0,336

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,001 mg/m ³ (EASY TRA v4.1)	0,006
dermal	systemic	long-term	0,017 mg/kg bw/day (RISKOFDERM v2.1)	0,336

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,055 mg/m ³ (ECETOC TRA worker v3)	0,305
dermal	systemic	long-term	0,022 mg/kg bw/day (ECETOC TRA worker v3)	0,444

1.3.10. Worker exposure: Use as laboratory reagent (PROC15)

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Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,006 mg/m ³ (EASY TRA v4.1)	0,033
dermal	systemic	long-term	0,010 mg/kg bw/day (EASY TRA v4.1)	0,206

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

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES2: General exposures, Lubricants, greases, release products, Engine lubricant service

2.1. Title section

Structured Short Title	: Use at industrial sites.
Environmental release category(ies)	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure 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)
Product (sub) category(ies)	: PC17: Hydraulic fluids PC24: Lubricants, greases, release products

Contributing Scenario (CS) Environment		
CS1	Industrial use of processing aids in processes and products, not becoming part of articles	ERC4

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS5	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)

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Amount used, frequency and duration of use (or from service life)	
Daily amount per site	: 100 kg
Annual amount per site	: 30000 kg
Release type	: Intermittent use/release
Emission days per year	: 300

Technical and organisational conditions and measures
Product must not be released into water without pre-treatment.
Suitable technique(s) to limit releases to soil: No incorporation in soil No specific measures identified.

Conditions and measures related to sewage treatment plant	
STP type	: Municipal sewage treatment plant
STP effluent	: 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)	
Waste disposal methods	: Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure	
Receiving surface water flow	: 18.000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100
Emission or Release Factor: Air	: Worst case assumption 0,005 %
Emission or Release Factor: Water	: Worst case assumption 0 %
Emission or Release Factor: Soil	: Worst case assumption 0 %

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

Product (article) characteristics

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Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
	: Assumes a good basic standard of occupational hygiene is implemented

2.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min

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Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor

Body parts exposed : Palms of both hands (480 cm²)

: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers the percentage of the substance in the product up to 5%.

Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration < 240 min

Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Dermal - minimum efficiency of 98 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor
Body parts exposed : Assumes that potential dermal contact is limited to hands.
: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers the percentage of the substance in the product up to 5%.
Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.
General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.
Dermal - minimum efficiency of 98 %

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Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,0000067 mg/L (EASY TRA v4.1)	0,033
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,034
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	0,0000012 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Sewage treatment plant	< 0,0000001 mg/L (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,018 mg/m ³ (EASY TRA v4.1)	0,102
dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007

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2.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,097 mg/m ³ (ECETOC TRA worker v3)	0,541
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	0,069

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,110 mg/m ³ (ECETOC TRA worker v3)	0,609
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,097 mg/m ³ (ECETOC TRA worker v3)	0,541
dermal	systemic	long-term	0,007 mg/kg bw/day (ECETOC TRA worker v3)	0,137

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

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Guidance to Downstream Users

Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.

Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES3: General exposures, Lubricants, greases, release products, Engine lubricant service, Indoor use

3.1. Title section

Structured Short Title	: Widespread use by professional workers.
Environmental release category(ies)	: ERC9a: Wide dispersive indoor use of substances in closed systems
Process category(ies)	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure 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 PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems
Product (sub) category(ies)	: PC17: Hydraulic fluids PC24: Lubricants, greases, release products
Sector(s) of use	: SU22: Public domain (administration, education, entertainment, services, craftsmen)

Contributing Scenario (CS) Environment		
CS1	Wide dispersive indoor use of substances in closed systems	ERC9a

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS5	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS6	Heat and pressure transfer fluids in dispersive, professional use but closed systems	PROC20

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3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Wide dispersive indoor use of substances in closed systems (ERC9a)

Amount used, frequency and duration of use (or from service life)	
Daily amount for wide dispersive uses	: 0,002 kg
Annual amount for wide disperse uses	: 15000 kg
Release type	: Intermittent use/release
Emission days per year	: 365

Technical and organisational conditions and measures	
Product must not be released into water without pre-treatment.	

Conditions and measures related to sewage treatment plant	
STP type	: Municipal sewage treatment plant
STP effluent	: 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)	
Waste disposal methods	: Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure	
Receiving surface water flow	: 18.000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100
Emission or Release Factor: Air	: Worst case assumption 0,01 %
Emission or Release Factor: Water	: Worst case assumption 0,05 %
Emission or Release Factor: Soil	: Worst case assumption 0,1 %

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

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
	: Assumes a good basic standard of occupational hygiene is implemented

3.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.

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Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 90 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min

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Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities	
Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	
Dermal - minimum efficiency of 90 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities	
Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374.	

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Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use	: Indoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
	: Assumes a good basic standard of occupational hygiene is implemented

3.2.6. Control of worker exposure: Heat and pressure transfer fluids in dispersive, professional use but closed systems (PROC20)

Product (article) characteristics

Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

Amount used, frequency and duration of use (or from service life)

Duration	: Exposure duration < 240 min
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Technical and organisational conditions and measures

Provide extraction ventilation at points where emissions occur.

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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implemented

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Wide dispersive indoor use of substances in closed systems (ERC9a)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,0000067 mg/L (EASY TRA v4.1)	0,034
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,035
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	< 0,0000001 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Sewage treatment plant	0,0000005 mg/L (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,009 mg/m ³ (EASY TRA v4.1)	0,051
dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007

3.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
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inhalative	systemic	long-term	0,091 mg/m ³ (EASY TRA v4.1)	0,508
dermal	systemic	long-term	0,014 mg/kg bw/day (EASY TRA v4.1)	0,274

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,055 mg/m ³ (ECETOC TRA worker v3)	0,305
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,055 mg/m ³ (ECETOC TRA worker v3)	0,305
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

3.3.6. Worker exposure: Heat and pressure transfer fluids in dispersive, professional use but closed systems (PROC20)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,055 mg/m ³ (EASY TRA v4.1)	0,305
dermal	systemic	long-term	0,017 mg/kg	0,343

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			bw/day (EASY TRA v4.1)	
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3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES4: General exposures, Lubricants, greases, release products, Engine lubricant service, Outdoor use

4.1. Title section

Structured Short Title	: Widespread use by professional workers.
Environmental release category(ies)	: ERC9b : Wide dispersive outdoor use of substances in closed systems
Process category(ies)	: PROC1 : Use in closed process, no likelihood of exposure PROC2 : Use in closed, continuous process with occasional controlled exposure 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 PROC20 : Heat and pressure transfer fluids in dispersive, professional use but closed systems
Product (sub) category(ies)	: PC17 : Hydraulic fluids PC24 : Lubricants, greases, release products
Sector(s) of use	: SU22 : Public domain (administration, education, entertainment, services, craftsmen)

Contributing Scenario (CS) Environment		
CS1	Wide dispersive outdoor use of substances in closed systems	ERC9b

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS5	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS6	Heat and pressure transfer fluids in dispersive, professional use but closed systems	PROC20

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4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Wide dispersive outdoor use of substances in closed systems (ERC9b)

Amount used, frequency and duration of use (or from service life)	
Daily amount for wide dispersive uses	: 0,002 kg
Annual amount for wide disperse uses	: 15000 kg
Release type	: Intermittent use/release
Emission days per year	: 365

Conditions and measures related to sewage treatment plant	
STP type	: none
STP effluent	: 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)	
Waste disposal methods	: Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure	
Receiving surface water flow	: 18.000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100
Emission or Release Factor: Air	: Worst case assumption 0,01 %
Emission or Release Factor: Water	: Worst case assumption 0,05 %
Emission or Release Factor: Soil	: Worst case assumption 0,1 %

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

Product (article) characteristics

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Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures
Ensure operatives are trained to minimise exposures.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure	
Indoor or outdoor use	: Outdoor
Body parts exposed	: Palm of one hand

4.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

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Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Outdoor
Body parts exposed : Palms of both hands (480 cm²)

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

Product (article) characteristics

Concentration of substance in product : Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration < 240 min

Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

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Indoor or outdoor use	: Outdoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.

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

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min

Technical and organisational conditions and measures	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 90 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Outdoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.

4.2.6. Control of worker exposure: Heat and pressure transfer fluids in dispersive, professional use but closed systems (PROC20)

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture

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Vapour pressure : > 10 hPa

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration < 240 min

Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Outdoor
Body parts exposed : Palms of both hands (480 cm²)

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Wide dispersive outdoor use of substances in closed systems (ERC9b)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,0000067 mg/L (EASY TRA v4.1)	0,034
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,035
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	< 0,0000001 mg/kg dry weight (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,006 mg/m ³ (EASY TRA v4.1)	0,036
dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007

4.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,064 mg/m ³ (EASY TRA v4.1)	0,355
dermal	systemic	long-term	0,013 mg/kg bw/day (EASY TRA v4.1)	0,274

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,038 mg/m ³ (ECETOC TRA worker v3)	0,213
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

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

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Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,038 mg/m ³ (ECETOC TRA worker v3)	0,213
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

4.3.6. Worker exposure: Heat and pressure transfer fluids in dispersive, professional use but closed systems (PROC20)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,038 mg/m ³ (EASY TRA v4.1)	0,213
dermal	systemic	long-term	0,017 mg/kg bw/day (EASY TRA v4.1)	0,343

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

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES5: General exposures (open systems), Use of lubricants and greases, Corrosion inhibitors, Rolling, Brushing, Dipping, Spraying

5.1. Title section

Structured Short Title	: Use at industrial sites.
Environmental release category(ies)	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	: PROC13: Treatment of articles by dipping and pouring PROC10: Roller application or brushing PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC2: Use in closed, continuous process with occasional controlled exposure PROC1: Use in closed process, no likelihood of exposure
Product (sub) category(ies)	: PC24: Lubricants, greases, release products

Contributing Scenario (CS) Environment		
CS1	Industrial use of processing aids in processes and products, not becoming part of articles	ERC4

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS5	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)	PROC9
CS6	Roller application or brushing	PROC10
CS7	Treatment of articles by dipping and pouring	PROC13

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5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	: 100 kg
Annual amount per site	: 30000 kg
Release type	: Intermittent use/release
Emission days per year	: 300

Technical and organisational conditions and measures
Product must not be released into water without pre-treatment.
Suitable technique(s) to limit releases to soil: No incorporation in soil No specific measures identified.

Conditions and measures related to sewage treatment plant	
STP type	: Default industrial size
STP effluent	: 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)	
Waste disposal methods	: Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure	
Receiving surface water flow	: 18.000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100
Emission or Release Factor: Air	: Worst case assumption 0,005 %
Emission or Release Factor: Water	: Worst case assumption 0 %
Emission or Release Factor: Soil	: Worst case assumption 0 %

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
: Assumes a good basic standard of occupational hygiene is implemented	

5.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics	
Concentration of substance in prod-	: Covers the percentage of the substance in the product up

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uct	to 5%.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 95 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

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Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. Dermal - minimum efficiency of 98 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 60 min

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor
Body parts exposed : Palms of both hands (480 cm²)
: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid mixture
Vapour pressure : > 10 hPa

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min

Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

Use only in area provided with appropriate exhaust ventilation.
Dermal - minimum efficiency of 90 %

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

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Indoor or outdoor use	: Indoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure adequate ventilation, especially in confined areas.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Dermal - minimum efficiency of 98 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,0000067 mg/L (EASY TRA v4.1)	0,033
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,034
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	0,0000012 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Sewage treatment plant	< 0,0000001 mg/L (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,018 mg/m ³ (EASY TRA v4.1)	0,102
dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007

5.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,097 mg/m ³ (ECETOC TRA worker v3)	0,541
dermal	systemic	long-term	0,003 mg/kg	0,069

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			bw/day (ECETOC TRA worker v3)	
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5.3.4. Worker exposure: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities (PROC8b)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,110 mg/m ³ (ECETOC TRA worker v3)	0,609
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,037 mg/m ³ (ECETOC TRA worker v3)	0,203
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA worker v3)	0,069

5.3.6. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,009 mg/m ³ (ECETOC TRA worker v3)	0,051
dermal	systemic	long-term	0,014 mg/kg bw/day (ECETOC TRA worker v3)	0,274

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,097 mg/m ³ (ECETOC TRA worker v3)	0,541
dermal	systemic	long-term	0,014 mg/kg bw/day (ECETOC TRA worker v3)	0,274

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

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES6: General exposures (open systems), Use of lubricants and greases, Corrosion inhibitors, Rolling, Brushing, Dipping, Spraying, Indoor use

6.1. Title section

Structured Short Title	: Widespread use by professional workers.
Environmental release category(ies)	: ERC8a : Wide dispersive indoor use of processing aids in open systems
Process category(ies)	: PROC1 : Use in closed process, no likelihood of exposure PROC2 : Use in closed, continuous process with occasional controlled exposure PROC8a : Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities PROC10 : Roller application or brushing PROC13 : Treatment of articles by dipping and pouring
Product (sub) category(ies)	: PC24 : Lubricants, greases, release products
Sector(s) of use	: SU 22 : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Contributing Scenario (CS) Environment		
CS1	Wide dispersive indoor use of processing aids in open systems	ERC8a

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities	PROC8a
CS5	Roller application or brushing	PROC10
CS6	Treatment of articles by dipping and pouring	PROC13

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6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Wide dispersive indoor use of processing aids in open systems (ERC8a)

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	: 0,822 kg
Annual amount for wide disperse uses	: 6000 kg
Release type	: Intermittent use/release
Emission days per year	: 365

Technical and organisational conditions and measures
Product must not be released into water without pre-treatment.
Suitable technique(s) to limit releases to soil: No incorporation in soil No specific measures identified.

Conditions and measures related to sewage treatment plant	
STP type	: Municipal sewage treatment plant
STP effluent	: 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)	
Waste disposal methods	: Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure	
Receiving surface water flow	: 18.000 m3/d
Local freshwater dilution factor	: 10
Local marine water dilution factor	: 100
Emission or Release Factor: Air	: Worst case assumption 0,010 %
Emission or Release Factor: Water	: Worst case assumption 0,050 %
Emission or Release Factor: Soil	: Worst case assumption 0,100 %

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

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture
Vapour pressure	: > 10 hPa

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Handle substance within a closed system.	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palm of one hand
	: Assumes a good basic standard of occupational hygiene is implemented

6.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.

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uct	
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
General standard operating procedures to control routine activities Ensure operatives are trained to minimise exposures.	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Dermal - minimum efficiency of 90 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics	
Concentration of substance in product	: Covers percentage substance in the product up to 1 %.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration < 240 min

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Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.
General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear suitable gloves tested to EN374.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor
Body parts exposed : Assumes that potential dermal contact is limited to hands.
: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid mixture
Vapour pressure : > 10 hPa

Amount used, frequency and duration of use (or from service life)

Application rate : 0,2 L/min
Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor
Body parts exposed : Assumes that potential dermal contact is limited to hands.
: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.
General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor

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Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Wide dispersive indoor use of processing aids in open systems (ERC8a)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,0000067 mg/L (EASY TRA v4.1)	0,033
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,034
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	< 0,0000001 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Sewage treatment plant	0,0000002 mg/L (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,009 mg/m ³ (EASY TRA v4.1)	0,051
dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007

6.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

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Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,091 mg/m ³ (EASY TRA v4.1)	0,508
dermal	systemic	long-term	0,014 mg/kg bw/day (EASY TRA v4.1)	0,274

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,055 mg/m ³ (ECETOC TRA worker v3)	0,305
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA worker v3)	0,165

6.3.5. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,01 mg/m ³ (ART v1.0)	0,054
dermal	systemic	long-term	0,038 mg/kg bw/day (RISKOFDERM v2.1)	0,76

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,091 mg/m ³	0,508

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			(ECETOC TRA worker v3)	
dermal	systemic	long-term	0,014 mg/kg bw/day (ECETOC TRA worker v3)	0,274

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

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES7: Outdoor use, Spraying, Dipping, Rolling, Brushing, Corrosion inhibitors, Use of lubricants and greases, General exposures (open systems)

7.1. Title section

Structured Short Title	: Widespread use by professional workers.
Environmental release category(ies)	: ERC8d : Wide dispersive outdoor use of processing aids in open systems
Process category(ies)	: PROC1 : Use in closed process, no likelihood of exposure PROC2 : Use in closed, continuous process with occasional controlled exposure PROC10 : Roller application or brushing
Product (sub) category(ies)	: PC24 : Lubricants, greases, release products
Sector(s) of use	: SU 22 : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Contributing Scenario (CS) Environment		
CS1	Wide dispersive outdoor use of processing aids in open systems	ERC8d

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Roller application or brushing	PROC10

7.2. Conditions of use affecting exposure

7.2.1. Control of environmental exposure: Wide dispersive outdoor use of processing aids in open systems (ERC8d)

Amount used, frequency and duration of use (or from service life)	
Daily amount per site	: 0,822 kg
Annual amount for wide disperse uses	: 6000 kg

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Release type	:	Intermittent use/release
Emission days per year	:	365

Technical and organisational conditions and measures	
Product must not be released into water without pre-treatment.	
Suitable technique(s) to limit releases to soil: No incorporation in soil No specific measures identified.	

Conditions and measures related to sewage treatment plant		
STP type	:	none
STP effluent	:	2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)		
Waste disposal methods	:	Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100
Emission or Release Factor: Air	:	Worst case assumption 0,010 %
Emission or Release Factor: Water	:	Worst case assumption 0,050 %
Emission or Release Factor: Soil	:	Worst case assumption 0,100 %

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

Product (article) characteristics		
Concentration of substance in product	:	Covers percentage substance in the product up to 1 %.
Physical form of product	:	Liquid mixture
Vapour pressure	:	> 10 hPa

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Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

Handle substance within a closed system.
General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Outdoor
Body parts exposed : Palm of one hand
: Assumes a good basic standard of occupational hygiene is implemented

7.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics

Concentration of substance in product : Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

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Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use : Outdoor
Body parts exposed : Palms of both hands (480 cm²)
: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers percentage substance in the product up to 1 %.
Physical form of product : Liquid mixture
Vapour pressure : > 10 hPa

Amount used, frequency and duration of use (or from service life)

Application rate : 0,2 L/min
Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

General standard operating procedures to control routine activities
Ensure operatives are trained to minimise exposures.

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

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Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.
Dermal - minimum efficiency of 90 %

Other conditions affecting workers exposure

Indoor or outdoor use	: Outdoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
	: Assumes a good basic standard of occupational hygiene is implemented

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

Ensure that direction of application is only horizontal or downward.

7.3. Exposure estimation and reference to its source

7.3.1. Environmental release and exposure: Wide dispersive outdoor use of processing aids in open systems (ERC8d)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,0000067 mg/L (EASY TRA v4.1)	0,033
Marine water	0,0000007 mg/L (EASY TRA v4.1)	0,034
Fresh water sediment	0,000026 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Marine sediment	0,0000027 mg/kg dry weight (EASY TRA v4.1)	< 0,001
Soil	< 0,0000001 mg/kg dry weight (EASY TRA v4.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,006 mg/m ³ (EASY TRA v4.1)	0,036

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dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007
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7.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,064 mg/m ³ (EASY TRA v4.1)	0,355
dermal	systemic	long-term	0,014 mg/kg bw/day (EASY TRA v4.1)	0,274

7.3.4. Worker exposure: Roller application or brushing (PROC10)

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,01 mg/m ³ (ART v1.0)	0,054
dermal	systemic	long-term	0,038 mg/kg bw/day (RISKOFDERM v2.1)	0,76

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

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an exposure scenario which includes as a minimum the conditions described in this exposure scenario.

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ES8: Treatment by heating, Lubricants, greases, release products, (open systems)

8.1. Title section

Structured Short Title	: Use at industrial sites.
Environmental release category(ies)	: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles
Process category(ies)	: PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities PROC13: Treatment of articles by dipping and pouring
Product (sub) category(ies)	: PC17: Hydraulic fluids PC24: Lubricants, greases, release products

Contributing Scenario (CS) Environment		
CS1	Industrial use of processing aids in processes and products, not becoming part of articles	ERC4

Contributing Scenario (CS) Worker		
CS2	Use in closed process, no likelihood of exposure	PROC1
CS3	Use in closed, continuous process with occasional controlled exposure	PROC2
CS4	Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities	PROC8b
CS5	Treatment of articles by dipping and pouring	PROC13

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)

Amount used, frequency and duration of use (or from service life)
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Daily amount per site	:	20 kg
Annual amount per site	:	6000 kg
Release type	:	Intermittent use/release
Emission days per year	:	300

Technical and organisational conditions and measures

Product must not be released into water without pre-treatment.

Conditions and measures related to sewage treatment plant

STP type : Municipal sewage treatment plant
STP effluent : 2.000 m3/d

Conditions and measures related to treatment of waste (including article waste)

Waste disposal methods : Can be incinerated, when in compliance with local regulations.

Other conditions affecting environmental exposure

Receiving surface water flow : 18.000 m3/d
Local freshwater dilution factor : 10
Local marine water dilution factor : 100
Emission or Release Factor: Air : Worst case assumption 0,005 %
Emission or Release Factor: Water : Worst case assumption < 0,001 %
Emission or Release Factor: Soil : Worst case assumption 0 %

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

Product (article) characteristics

Concentration of substance in product : Covers the percentage of the substance in the product up to 5%.
Physical form of product : Liquid mixture

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Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.
Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor
Body parts exposed : Palm of one hand
: Assumes a good basic standard of occupational hygiene is implemented

8.2.3. Control of worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

Product (article) characteristics

Concentration of substance in product : Covers the percentage of the substance in the product up to 5%.
Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration > 240 min
Use frequency : Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures

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Ensure adequate ventilation, especially in confined areas.

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Dermal - minimum efficiency of 95 %

Other conditions affecting workers exposure

Indoor or outdoor use : Indoor

Body parts exposed : Palms of both hands (480 cm²)

: Assumes a good basic standard of occupational hygiene is implemented

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

Product (article) characteristics

Concentration of substance in product : Covers the percentage of the substance in the product up to 5%.

Physical form of product : Liquid mixture

Amount used, frequency and duration of use (or from service life)

Duration : Exposure duration < 240 min

Technical and organisational conditions and measures

Ensure adequate ventilation, especially in confined areas.

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.

Suitable mask with particle filter P3 (European Norm 143)

Dermal - minimum efficiency of 98 %

Inhalation - minimum efficiency of 98 %

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Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor
Body parts exposed	: Assumes that potential dermal contact is limited to hands.
	: Assumes a good basic standard of occupational hygiene is implemented
	: Process Temperature 123 °C

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

Product (article) characteristics	
Concentration of substance in product	: Covers the percentage of the substance in the product up to 5%.
Physical form of product	: Liquid mixture

Amount used, frequency and duration of use (or from service life)	
Duration	: Exposure duration > 240 min
Use frequency	: Covers daily exposures up to 8 hours (unless stated differently).

Technical and organisational conditions and measures	
Ensure operatives are trained to minimise exposures.	
Use only in area provided with appropriate exhaust ventilation. Inhalation - minimum efficiency of 90 %	

Conditions and measures related to personal protection, hygiene and health evaluation	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls. Suitable mask with particle filter P3 (European Norm 143) Dermal - minimum efficiency of 98 % Inhalation - minimum efficiency of 98 %	

Other conditions affecting workers exposure	
Indoor or outdoor use	: Indoor

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Body parts exposed	: Palms of both hands (480 cm ²)
	: Assumes a good basic standard of occupational hygiene is implemented
	: Process Temperature 123 °C

8.3. Exposure estimation and reference to its source

8.3.1. Environmental release and exposure: Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)

Protection Target	Exposure estimate	Risk Characterisation Ratio (RCR)
Fresh water	0,000007 mg/L (EUSES v2.1)	0,033
Marine water	0,0000007 mg/L (EUSES v2.1)	0,034
Fresh water sediment	0,000026 mg/kg dry weight (EUSES v2.1)	< 0,01
Marine sediment	0,0000027 mg/kg dry weight (EUSES v2.1)	< 0,01
Soil	0,0000003 mg/kg dry weight (EUSES v2.1)	< 0,001
Sewage treatment plant	< 0,0000001 mg/L (EUSES v2.1)	< 0,001

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,018 mg/m ³ (EASY TRA v4.1)	0,102
dermal	systemic	long-term	< 0,001 mg/kg bw/day (EASY TRA v4.1)	0,007

8.3.3. Worker exposure: Use in closed, continuous process with occasional controlled exposure (PROC2)

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Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,097 mg/m ³ (ECETOC TRA)	0,541
dermal	systemic	long-term	0,003 mg/kg bw/day (ECETOC TRA)	0,069

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,110 mg/m ³ (ECETOC TRA)	0,609
dermal	systemic	long-term	0,008 mg/kg bw/day (ECETOC TRA)	0,165

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

Exposure route	Health effect	Exposure indicator	Exposure estimate	Risk Characterisation Ratio (RCR)
inhalative	systemic	long-term	0,037 mg/m ³ (ECETOC TRA)	0,203
dermal	systemic	long-term	0,014 mg/kg bw/day (ECETOC TRA)	0,274

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

Guidance to Downstream Users
Fulfilling the above conditions the downstream user is deemed to work safely inside the boundaries set by this exposure scenario.
Other conditions should only be considered if the downstream user implements or recommends an

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exposure scenario which includes as a minimum the conditions described in this exposure scenario.