SAFETY DATA SHEET

This safety data sheet was created pursuant to the requirements of: Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

EVO-STIK WHITE SPIRITS
Supersedes date 20-Dec-2022

Revision date 16-Aug-2024
Revision Number 2

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

1.1. Product identifier

Product Name EVO-STIK WHITE SPIRITS

Other means of identification

REACH Registration Number 01-2119458049-33-xxxx
EC No (EU Index No) 919-446-0
Chemical name Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)
Pure substance/mixture Substance

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

Recommended use Solvent mixture

Uses advised against None known

1.3. Details of the supplier of the safety data sheet

Company Name
Bostik Industries Limited
Newtown, Swords
Co. Dublin Ireland
Tel: +353 (1) 8624900
Fax: +353 (1) 8402186

E-mail address SDS.box-EU@bostik.com

1.4. Emergency telephone number

Ireland **NPIC - National Poison Information Centre**
Members of the Public: +353 (01) 8092166 (8.00 am to 10.00 pm - 7 days a week)
Healthcare Professionals: +353 (01) 8092566 (24 hour service)
United Kingdom Bostik: +44 (1785) 272650 (9am to 5pm Mon-Fri)
Europe 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Aspiration hazard	Category 1 - (H304)
Specific target organ toxicity (single exposure)	Category 3 - (H336)
Category 3 Narcotic effects	
Specific target organ toxicity (repeated exposure)	Category 1 - (H372)
Chronic aquatic toxicity	Category 2 - (H411)
Flammable liquids	Category 3 - (H226)

2.2. Label elements

919-446-0

Contains Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)

Signal word
Danger

Hazard statements
H304 - May be fatal if swallowed and enters airways
H336 - May cause drowsiness or dizziness
H372 - Causes damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects
H226 - Flammable liquid and vapor

EU Specific Hazard Statements
EUH066 - Repeated exposure may cause skin dryness or cracking

Precautionary Statements - EU (§28, 1272/2008)
P101 - If medical advice is needed, have product container or label at hand
P102 - Keep out of reach of children
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P273 - Avoid release to the environment
P270 - Do not eat, drink or smoke when using this product
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor
P331 - Do NOT induce vomiting
P273 - Avoid release to the environment
P391 - Collect spillage
P403 + P235 - Store in a well-ventilated place. Keep cool
P501 - Dispose of contents/ container to an approved waste disposal plant

Additional information
This product requires child resistant fastenings if supplied to the general public. This product requires tactile warnings if supplied to the general public.

2.3. Other hazards

In use, may form flammable/explosive vapor-air mixture.

PBT & vPvB
The components in this formulation do not meet the criteria for classification as PBT or vPvB.

Endocrine Disruptor Information This product does not contain any known or suspected endocrine disruptors.

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical nature
Substance of unknown or variable composition, complex reaction products or biological material (UVCB).

Chemical name	EC No (EU Index No).	CAS No..	Classification according to Regulation (EC) No. 1272/2008 [CLP]	Specific concentration limit (SCL)	M-Factor	M-Factor (long-term)	REACH registration number
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) 80 - 100 %	919-446-0	RR-91855-8	STOT SE 3 (H336) STOT RE 1 (H372) Asp. Tox. 1 (H304) Aquatic Chronic 2 (H411) Flam. Liq. 3 (H226) (EUH066)	-	-	-	01-2119458049-33-XXXX
Xylenes (o-, m-, p-isomers) 0-<3 %	215-535-7 (601-022-00-9)	1330-20-7	Acute Tox. 4 (H312) Acute Tox. 4 (H332) Skin Irrit. 2 (H315) Eye Irrit. 2 (H319) STOT SE 3 (H335) STOT RE 2 (H373) Asp. Tox. 1 (H304) Aquatic Chronic 3 (H412) Flam. Liq. 3 (H226)	-	-	-	01-2119488216-32-XXXX
Ethylbenzene 0-<1 %	202-849-4 (601-023-00-4)	100-41-4	Acute Tox. 4 (H332) STOT RE 2 (H373) Asp. Tox. 1 (H304) Aquatic Chronic 3 (H412) Flam. Liq. 2 (H225)	-	-	-	01-2119489370-35-XXXX
1,3,5-Trimethylbenzene 0-<1 %	203-604-4 (601-025-00-5)	108-67-8	STOT SE 3 (H335) Aquatic Chronic 2 (H411) Flam. Liq. 3 (H226)	STOT SE 3 :: C>=25%	-	-	01-2119463878-19-XXXX

Substances identified by a number starting “RR-“ in the CAS-field are substances for which the CAS# is not adopted in EU and we use an internal numbering system to track within our SDS software
EC# 919-446-0 Related CAS no 64742-82-1

Full text of H- and EUH-phrases: see section 16

Acute Toxicity Estimate
If LD50/LC50 data is not available or does not correspond to the classification category, then the appropriate conversion value from CLP Annex I, Table 3.1.2, is used to calculate the acute toxicity estimate (ATEmix) for classifying a mixture based on its components

Chemical name	EC No (EU Index No)	CAS No.	Oral LD50 mg/kg	Dermal LD50 mg/kg	Inhalation LC50 - 4 hour - dust/mist - mg/L	Inhalation LC50 - 4 hour - vapor - mg/L	Inhalation LC50 - 4 hour - gas - ppm
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	919-446-0	RR-91855-8	-	3400	-	-	-
Xylenes (o-, m-, p-isomers)	215-535-7 (601-022-00-9)	1330-20-7	2500	1990	4.8	-	-
Ethylbenzene	202-849-4 (601-023-00-4)	100-41-4	3500	15400	4.99	17.6	-
1,3,5-Trimethylbenzene	203-604-4 (601-025-00-5)	108-67-8	-	-	-	-	-

This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

Notes
See section 16 for more information

Chemical name	Notes
Xylenes (o-, m-, p- isomers) - 1330-20-7	C

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation Remove to fresh air. Aspiration into lungs can produce severe lung damage. If breathing has stopped, give artificial respiration. Get medical attention immediately. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur.

Eye contact Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes.

Ingestion Do NOT induce vomiting. Rinse mouth. Never give anything by mouth to an unconscious person. ASPIRATION HAZARD IF SWALLOWED - CAN ENTER LUNGS AND CAUSE DAMAGE. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Get immediate medical attention.

Self-protection of the first aider Remove all sources of ignition. Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Use personal protective equipment as required. See section 8 for more information. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

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

Symptoms Difficulty in breathing. Coughing and/ or wheezing. Dizziness. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Effects of Exposure Causes damage to organs through prolonged or repeated exposure.

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

Note to physicians Because of the danger of aspiration, emesis or gastric lavage should not be employed unless the risk is justified by the presence of additional toxic substances.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable Extinguishing Media Dry chemical. Carbon dioxide (CO2). Water spray. Alcohol resistant foam.

Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical Risk of ignition. Keep product and empty container away from heat and sources of ignition. In the event of fire, cool tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Hazardous combustion products Carbon oxides.

5.3. Advice for firefighters

Special protective equipment and precautions for fire-fighters Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.

Other information Ventilate the area. Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Refer to protective measures listed in Sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

Methods for cleaning up Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

Prevention of secondary hazards Clean contaminated objects and areas thoroughly observing environmental regulations.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling Use personal protection equipment. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Use grounding and bonding connection when transferring this material to prevent static discharge, fire or explosion. Use with local exhaust

ventilation. Use spark-proof tools and explosion-proof equipment. Keep in an area equipped with sprinklers. Use according to package label instructions. Handle in accordance with good industrial hygiene and safety practice. In case of insufficient ventilation, wear suitable respiratory equipment.

General hygiene considerations Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks, flame and other sources of ignition (i.e., pilot lights, electric motors and static electricity). Keep in properly labeled containers. Do not store near combustible materials. Keep in an area equipped with sprinklers. Store in accordance with the particular national regulations. Store in accordance with local regulations. Store locked up. Keep out of the reach of children. Store away from other materials.

Recommended storage temperature Keep at temperatures between 41 and 77 °F / 5 and 25 °C.

7.3. Specific end use(s)

Specific use(s)
Solvent mixture.

Risk Management Methods (RMM) The information required is contained in this Safety Data Sheet.

Other information Observe technical data sheet.

8. Exposure controls/personal protection

8.1. Control parameters

Exposure Limits

Chemical name	European Union	Ireland	United Kingdom
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) RR-91855-8	-	-	TWA: 350 mg/m^3
Xylenes (o-, m-, p- isomers) 1330-20-7	TWA: 50 ppm TWA: 221 mg/m^3 STEL: 100 ppm STEL: 442 mg/m^3 *	TWA: 50 ppm TWA: 221 mg/m^3 STEL: 100 ppm STEL: 442 mg/m^3 Sk*	TWA: 50 ppm TWA: 220 mg/m^3 STEL: 100 ppm STEL: 441 mg/m^3 Sk*
Ethylbenzene 100-41-4	TWA: 100 ppm TWA: 442 mg/m^3 STEL: 200 ppm STEL: 884 mg/m^3 *	TWA: 100 ppm TWA: 442 mg/m^3 STEL: 200 ppm STEL: 884 mg/m^3 Sk*	TWA: 100 ppm TWA: 441 mg/m^3 STEL: 125 ppm STEL: 552 mg/m^3 Sk*
1,3,5-Trimethylbenzene 108-67-8	TWA: 20 ppm TWA: 100 mg/m^3	TWA: 20 ppm TWA: 100 mg/m^3 STEL: 60 ppm STEL: 300 mg/m^3	

Derived No Effect Level (DNEL) No information available

Derived No Effect Level (DNEL)			
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) (RR-91855-8)			
Type	Exposure route	Derived No Effect Level (DNEL)	Safety factor

worker Long term Systemic health effects	Inhalation	330 mg/m³	
worker Long term Systemic health effects	Dermal	44 mg/kg bw/day	

Xylenes (o-, m-, p- isomers) (1330-20-7)			
Type	Exposure route	Derived No Effect Level (DNEL)	Safety factor
Long term Systemic health effects worker	Dermal	180 mg/kg bw/day	
Long term Systemic health effects worker	Inhalation	77 mg/m³	
Short term Local health effects Systemic health effects worker	Inhalation	289 mg/m³	

Derived No Effect Level (DNEL)			
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) (RR-91855-8)			
Type	Exposure route	Derived No Effect Level (DNEL)	Safety factor
Consumer Long term Systemic health effects	Inhalation	71 mg/m³	
Consumer Long term Systemic health effects	Dermal	26 mg/kg bw/day	
Consumer Long term Systemic health effects	Oral	26 mg/kg bw/day	

Predicted No Effect Concentration (PNEC) No information available.

8.2. Exposure controls

Engineering controls Ensure adequate ventilation, especially in confined areas. Vapors/aerosols must be exhausted directly at the point of origin.

Personal protective equipment

Eye/face protection Tight sealing safety goggles.

Hand protection Wear protective gloves. The breakthrough time of the gloves depends on the material and the thickness as well as the temperature. Gloves must conform to standard EN 374 Break through time >480 minutes

Skin and body protection Antistatic footwear. Wear fire/flame resistant/retardant clothing.

Respiratory protection In case of inadequate ventilation wear respiratory protection. In case of mist, spray or aerosol exposure wear suitable personal respiratory protection and protective suit.

Recommended filter type: Organic gases and vapors filter conforming to EN 14387.

Environmental exposure controls Do not allow into any sewer, on the ground or into any body of water.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	Liquid
Appearance	Liquid
Color	Colorless
Odor	Aromatic. Petroleum distillates.

Property	**Values**	**Remarks • Method**
Melting point / freezing point	No data available	None known
Initial boiling point and boiling range	158 - 191 °C	
Flammability	No data available	Flammable liquid
Flammability Limit in Air		None known
Upper flammability or explosive limits	7	
Lower flammability or explosive limits	0.7	
Flash point	40 °C	
Autoignition temperature	275.0000 °C	
Decomposition temperature		Not applicable
pH	No data available	Not applicable. Insoluble in water.
pH (as aqueous solution)	No data available	None known
Kinematic viscosity	0.95 mm²/s	@ 20 °C
Dynamic viscosity	1.03 mPa s	
Water solubility	Insoluble in water.	
Solubility(ies)	Organic solvents	None known
Partition coefficient	No data available	None known
Vapor pressure	199	Pa
Relative density	0.79 -	
Bulk density	No data available	
Density	0.8 g/ml	
Relative vapor density	No data available	None known
Particle characteristics		
Particle Size	No information available	
Particle Size Distribution	No information available	

9.2. Other information

Solid content (%)	No information available
VOC content	No data available

9.2.1. Information with regard to physical hazard classes
Not applicable

9.2.2. Other safety characteristics
No information available 57

SECTION 10: Stability and reactivity

10.1. Reactivity

Reactivity No information available.

10.2. Chemical stability

Stability Stable under normal conditions.

Explosion data

Sensitivity to mechanical impact None.

Sensitivity to static discharge Yes.

10.3. Possibility of hazardous reactions

Possibility of hazardous reactions None under normal processing.

10.4. Conditions to avoid

Conditions to avoid Heat, flames and sparks.

10.5. Incompatible materials

Incompatible materials None known based on information supplied.

10.6. Hazardous decomposition products

Hazardous decomposition products Thermal decomposition can lead to release of irritating and toxic gases and vapors.

SECTION 11: Toxicological information

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

Information on likely routes of exposure

Product Information

Inhalation Specific test data for the substance or mixture is not available. Aspiration into lungs can produce severe lung damage. May cause pulmonary edema. Pulmonary edema can be fatal. May cause irritation of respiratory tract. May cause drowsiness or dizziness.

Eye contact Specific test data for the substance or mixture is not available. May cause irritation.

Skin contact Repeated exposure may cause skin dryness or cracking.

Ingestion Specific test data for the substance or mixture is not available. Potential for aspiration if swallowed. May cause lung damage if swallowed. Aspiration may cause pulmonary edema and pneumonitis. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms Difficulty in breathing. Coughing and/ or wheezing. Dizziness. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting.

Acute toxicity

Numerical measures of toxicity

Component Information

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%)	LD50 >15000 mg/Kg (Rattus) OECD 401	LD50 > 3400 mg/kg (Rattus) OECD 402	LC50 (4hrs) >13.1 mg/l (Rattus)
Xylenes (o-, m-, p- isomers)	=3500 mg/kg (Rattus)	> 1700 mg/kg (Oryctolagus	= 11 mg/L (ATE)

		cuniculus) > 4350 mg/kg (Oryctolagus cuniculus)	
Ethylbenzene	=3500 mg/kg (Rattus)	= 15400 mg/kg (Oryctolagus cuniculus)	=17.6 mg/L (Rattus) 4 h
1,3,5-Trimethylbenzene	=5000 mg/kg (Rattus)	-	= 24 g/m^3 (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Based on available data, the classification criteria are not met.

Serious eye damage/eye irritation Based on available data, the classification criteria are not met.

Respiratory or skin sensitization Based on available data, the classification criteria are not met.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT - single exposure May cause drowsiness or dizziness.

STOT - repeated exposure Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard May be fatal if swallowed and enters airways.

11.2. Information on other hazards

11.2.1. Endocrine disrupting properties

Endocrine disrupting properties No information available.

11.2.2. Other information

Other adverse effects No information available.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity Toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea	M-Factor	M-Factor (long-term)

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) RR-91855-8	EL50 (72h) = 4.1 mg/l (Pseudokirchneriella subcapitata) OECD 401	LL50 96hr 10-30 mg/l (Oncorhynchus mykiss)	-	EL50 48hr 10-30mg/l (daphnia magna)		
Xylenes (o-, m-, p- isomers) 1330-20-7	-	LC50 96 h 2.6 mg/L (Oncorhynchus mykiss) (OECD 203)	EC50 = 0.0084 mg/L 24 h	EC50 48 h = 3.4 mg/L (Dappnia magna)		
Ethylbenzene 100-41-4	EC50 72 h 2.6 - 11.3 mg/L (Pseudokirchneriella subcapitata)	LC50 96 h = 4.2 mg/L (Oncorhynchus mykiss semi-static)	EC50 = 9.68 mg/L 30 min EC50 = 96 mg/L 24 h	EC50: 1.8 - 2.4mg/L (48h, Daphnia magna)		
1,3,5-Trimethylbenzene 108-67-8	-	LC50: =3.48mg/L (96h, Pimephales promelas)	-	EC50: =50mg/L (24h, Daphnia magna)		

12.2. Persistence and degradability

Persistence and degradability No information available.

Hydrocarbons, C9-C12, n-alkanes, isoalkanes, cyclics, aromatics (2-25%) (RR-91855-8)

Method	Exposure time	Value	Results
	28 days	biodegradation	74.7 % Readily biodegradable

Xylenes (o-, m-, p- isomers) (1330-20-7)

Method	Exposure time	Value	Results
OECD Test No. 301F: Ready Biodegradability: Manometric Respirometry Test (TG 301 F)	28 days	biodegradation	87.8 % Readily biodegradable

12.3. Bioaccumulative potential

Bioaccumulation

Component Information

Chemical name	Partition coefficient
Xylenes (o-, m-, p- isomers)	3.15
Ethylbenzene	3.6

12.4. Mobility in soil

Mobility in soil Not expected to adsorb on soil.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment The product does not contain any substance(s) classified as PBT or vPvB above the threshold of declaration.

Chemical name	PBT and vPvB assessment
Xylenes (o-, m-, p- isomers)	The substance is not PBT / vPvB
Ethylbenzene	The substance is not PBT / vPvB
1,3,5-Trimethylbenzene	The substance is not PBT / vPvB

12.6. Endocrine disrupting properties

Endocrine disrupting properties No information available.

12.7. Other adverse effects

No information available.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste from residues/unused products	Should not be released into the environment. Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.
Contaminated packaging	Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.
European Waste Catalog	08 01 11* 08 04 09* 15 01 10*
Other information	Waste codes should be assigned by the user based on the application for which the product was used.

SECTION 14: Transport information

Note: The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments made in non-bulk packages (see regulatory definition). The information shown here, may not always agree with the bill of lading shipping description for the material.

Land transport (ADR/RID)

14.1 UN number or ID number	UN1300
14.2 UN proper shipping name	Turpentine substitute
14.3 Transport hazard class(es)	3
Labels	3
14.4 Packing group	III
Description	UN1300, Turpentine substitute, 3, III, (D/E), Environmentally Hazardous
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	None
Classification code	F1
Tunnel restriction code	(D/E)
Limited quantity (LQ)	5 L
ADR Hazard Id (Kemmler Number)	30

IMDG

14.1 UN number or ID number	UN1300
14.2 UN proper shipping name	Turpentine substitute
14.3 Transport hazard class(es)	3
14.4 Packing group	III
Description	UN1300, Turpentine substitute, 3, III, (40°C c.c.), Marine pollutant
14.5 Marine pollutant	P

This material meets the definition of a marine pollutant

14.6 Special precautions for user	
Special Provisions	223
Limited Quantity (LQ)	5 L
EmS-No.	F-E, S-E

14.7 Maritime transport in bulk according to IMO instruments

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code Not applicable

Air transport (ICAO-TI / IATA-DGR)

14.1 UN number or ID number	UN1300
14.2 UN proper shipping name	Turpentine substitute
14.3 Transport hazard class(es)	3
14.4 Packing group	III
Description	UN1300, Turpentine substitute, 3, III
14.5 Environmental hazards	Yes
14.6 Special precautions for user	
Special Provisions	A3
Limited quantity (LQ)	10 L
ERG Code	3L

Section 15: REGULATORY INFORMATION

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

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work

Check whether measures in accordance with Directive 94/33/EC for the protection of young people at work must be taken.

Take note of Directive 92/85/EC on the protection of pregnant and breastfeeding women at work

Registration, Evaluation, Authorization, and Restriction of Chemicals (REACh) Regulation (EC 1907/2006)

SVHC: Substances of Very High Concern for Authorization:
This product does not contain candidate substances of very high concern at a concentration >=0.1% (Regulation (EC) No. 1907/2006 (REACH), Article 59)

EU-REACH (1907/2006) - Annex XVII - Substances subject to Restriction
This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

Substance subject to authorization per REACH Annex XIV
This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV)

Export Notification requirements
This product does not contain substances which are regulated pursuant to Regulation (EC) No. 649/2012 of the European parliament and of the council concerning the export and import of dangerous chemicals above the level that triggers a labeling obligation under Regulation (EC) No 1272/2008. Therefore this product is not subject to prior informed consent notification.

Dangerous substance category per Seveso Directive (2012/18/EU)
P5a - FLAMMABLE LIQUIDS
P5b - FLAMMABLE LIQUIDS
P5c - FLAMMABLE LIQUIDS
E2 - Hazardous to the Aquatic Environment in Category Chronic 2

Ozone-depleting substances (ODS) regulation (EC) 1005/2009
Not applicable

Persistent Organic Pollutants
Not applicable

REGULATION (EU) 2019/1148 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 June 2019 on the marketing and use of explosives precursors
Not applicable

National regulations

15.2. Chemical safety assessment

Chemical Safety Assessments have been carried out by the Reach registrants for substances registered at >10 tpa. No Chemical Safety Assessment has been carried out for this mixture

SECTION 16: Other information

Key or legend to abbreviations and acronyms used in the safety data sheet

Full text of H-Statements referred to under section 3
H225 - Highly flammable liquid and vapor
H226 - Flammable liquid and vapor
H304 - May be fatal if swallowed and enters airways
H312 - Harmful in contact with skin
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H332 - Harmful if inhaled
H335 - May cause respiratory irritation
H336 - May cause drowsiness or dizziness
H372 - Causes damage to organs through prolonged or repeated exposure
H373 - May cause damage to organs through prolonged or repeated exposure
H411 - Toxic to aquatic life with long lasting effects
H412 - Harmful to aquatic life with long lasting effects

Notes relating to the identification, classification and labelling of substances
Note C: Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers. In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers

SVHC: Substances of Very High Concern for Authorization:
PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances
vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances
STOT RE: Specific target organ toxicity - Repeated exposure
STOT SE: Specific target organ toxicity - Single exposure
EWC: European Waste Catalog
LOW: List of Wastes (see http://ec.europa.eu/environment/waste/framework/list.htm)
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
IATA: International Air Transport Association
ICAO: ICAO-TI: Technical Instructions for the Safe Transport of Dangerous Goods by Air
IMDG: International Maritime Dangerous Goods
RID: Regulations concerning the International Carriage of Dangerous Goods by Rail

Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
AGW	Occupational exposure limit value	BGW	Biological limit value
Ceiling	Maximum limit value	Sk*	Skin designation

Classification procedure	
Classification according to Regulation (EC) No. 1272/2008 [CLP]	Method Used
Acute oral toxicity	Calculation method
Acute dermal toxicity	Calculation method
Acute inhalation toxicity - gas	Calculation method
Acute inhalation toxicity - vapor	Calculation method
Acute inhalation toxicity - dust/mist	Calculation method
Skin corrosion/irritation	Calculation method
Serious eye damage/eye irritation	Calculation method
Respiratory sensitization	Calculation method
Skin sensitization	Calculation method
Mutagenicity	Calculation method
Carcinogenicity	Calculation method
Reproductive toxicity	Calculation method
STOT - single exposure	Calculation method
STOT - repeated exposure	Calculation method
Acute aquatic toxicity	Calculation method
Chronic aquatic toxicity	Calculation method
Aspiration hazard	Calculation method
Ozone	Calculation method

Key literature references and sources for data used to compile the SDS
European Food Safety Authority (EFSA)
European Chemicals Agency (ECHA) Committee for Risk Assessment (ECHA_RAC)
European Chemicals Agency (ECHA) (ECHA_API)
Environmental Protection Agency
Acute Exposure Guideline Level(s) (AEGL(s))
International Uniform Chemical Information Database (IUCLID)
National Institute of Technology and Evaluation (NITE)
NIOSH (National Institute for Occupational Safety and Health)
Organization for Economic Co-operation and Development Environment, Health, and Safety Publications
Organization for Economic Co-operation and Development High Production Volume Chemicals Program
Organization for Economic Co-operation and Development Screening Information Data Set

Prepared By Product Safety & Regulatory Affairs

Revision date 16-Aug-2024

Revision note SDS sections updated 2 3

Training Advice Provide adequate information, instruction, and training for operator

Further information No information available

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH)
Regulation (EC) No. 1907/2006 as amended by Regulation (EU) No. 2020/878, and Regulation (EC) No. 1272/2008

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

End of Safety Data Sheet

TFGES1IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Manufacture of substances, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC15 - Use as laboratory reagent

Environmental release category
ERC1 - Manufacture of substances
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
ESVOC SpERC 1.1.v1.

Processes, tasks, activities covered
Manufacture of the substance or use as a process chemical or extraction agent within closed or contained systems. Includes incidental exposures during recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 56000

Frequency and duration of use Continuous release
Emission Days (days/year): 300

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.01
Release fraction to wastewater from process (initial release prior to RMM): 0.00003
Release fraction to soil from process (initial release prior to RMM): 0.0001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment.
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 3200000
Assumed domestic sewage treatment plant flow (m3/d): 10000

Conditions and measures related to external treatment of waste for disposal
During manufacturing no waste of the substance is generated.

Conditions and measures related to external recovery of waste
During manufacturing no waste of the substance is generated.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems)	No specific measures identified.
Process sampling	No specific measures identified.
Laboratory activities	No specific measures identified.
Bulk transfers (open systems)	No specific measures identified.
Bulk transfers (closed systems)	No specific measures identified.
Equipment cleaning and maintenance	No specific measures identified.
Storage	No specific measures identified.
Storage with occasional controlled exposure.	No specific measures identified.

2.2b. Control of consumer exposure	
Product Category(ies)	**Operational conditions and risk management measures**

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES1AIK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Distribution of substance, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC15 - Use as laboratory reagent

Environmental release category
ERC1 - Manufacture of substances
ERC2 - Formulation of preparations
ERC3 - Formulation in materials
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
ERC5 - Industrial use resulting in inclusion into or onto a matrix
ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)
ERC6b - Industrial use of reactive processing aids
ERC6c - Industrial use of monomers for manufacture of thermoplastics
ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category
ESVOC SpERC 1.1b. v1.

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 170

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.001
Release fraction to wastewater from process (initial release prior to RMM): 0.000001
Release fraction to soil from process (initial release prior to RMM): 0.00001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 170000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure 0.5 - 10 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure	
Contributing Scenarios	**Operational conditions and risk management measures**
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Process sampling	No specific measures identified.
Laboratory activities	No specific measures identified.
Bulk transfers (closed systems)	No specific measures identified.
Bulk transfers (open systems)	No specific measures identified.
Drum and small package filling	No specific measures identified.
Equipment cleaning and maintenance	No specific measures identified.
Storage	No specific measures identified.
Storage with occasional controlled exposure.	No specific measures identified.

2.2b. Control of consumer exposure	
Product Category(ies)	**Operational conditions and risk management measures**

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES2IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Formulation & (re)packing of substances and mixtures, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

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

Environmental release category
ERC2 - Formulation of preparations

Specific Environmental Release Category
ESVOC SpERC 2.2.v1.

Processes, tasks, activities covered
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 7800

Frequency and duration of use Continuous release
Emission Days (days/year): 300

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.01
Release fraction to wastewater from process (initial release prior to RMM): 0.00002
Release fraction to soil from process (initial release prior to RMM): 0.0001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment.

No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 950000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Batch processes at elevated temperatures. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Process sampling	No specific measures identified.
Laboratory activities	No specific measures identified.
Bulk transfers	No specific measures identified.
Mixing operations (open systems)	No specific measures identified.
Manual. Transfer from/pouring from containers	No specific measures identified.
Drum/batch transfers	No specific measures identified.
Production or preparation of articles by tabletting, compression, extrusion or pelletisation	No specific measures identified.
Drum and small package filling	No specific measures identified.
Equipment cleaning and maintenance	No specific measures identified.
Storage	No specific measures identified.
Storage with occasional controlled exposure.	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES3IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Uses in Coatings, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC7 - Industrial spraying
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC13 - Treatment of articles by dipping and pouring
PROC14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15 - Use as laboratory reagent

Environmental release category
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
ESVOC SpERC 4.3a.v1.

Processes, tasks, activities covered
Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 43000

Frequency and duration of use Continuous release
Emission Days (days/year): 100

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.98
Release fraction to wastewater from process (initial release prior to RMM): 0.00007
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment.
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 90
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 59.8
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 270000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with sample collection. Use in contained systems	No specific measures identified.
Film formation - force drying (50 - 100°C). Stoving (>100°C). UV/EB radiation curing	No specific measures identified.
Mixing operations (closed systems). General exposures (closed systems)	No specific measures identified.
Film formation - air drying	No specific measures identified.
Preparation of material for application. Mixing operations (open systems)	No specific measures identified.
Spraying (automatic/robotic)	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Manual. Spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Material transfers; non-dedicated facility	No specific measures identified.
Material transfers; dedicated facility	No specific measures identified.
Roller, spreader, flow application	No specific measures identified.
Dipping, immersion and pouring	No specific measures identified.
Laboratory activities	No specific measures identified.
Material transfers. Drum/batch transfers. Transfer from/pouring from containers	No specific measures identified.
Production or preparation of articles by tabletting, compression, extrusion or pelletisation	No specific measures identified.
Equipment cleaning and maintenance	No specific measures identified.
Storage	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions

outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES3PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Uses in Coatings, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10 - Roller application or brushing
PROC11 - Non industrial spraying
PROC13 - Treatment of articles by dipping and pouring
PROC15 - Use as laboratory reagent
PROC19 - Hand-mixing with intimate contact and only PPE available

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.3b.v1.

Processes, tasks, activities covered
Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, brush, spreader by hand or similar methods, and film formation), and equipment cleaning, maintenance and associated laboratory activities.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 2.3

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.98
Release fraction to wastewater from process (initial release prior to RMM): 0.01
Release fraction to soil from process (initial release prior to RMM): 0.01

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by soil.
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 1900
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	Handle substance within a closed system.
Filling / preparation of equipment from drums or containers. Use in contained systems	Handle substance within a closed system.
General exposures (closed systems). Use in contained systems	Handle substance within a closed system.
Preparation of material for application. Use in contained batch processes	No specific measures identified.
Film formation - air drying. Outdoor	No specific measures identified.
Film formation - air drying. Indoor	No specific measures identified.
Preparation of material for application. Indoor	No specific measures identified.
Preparation of material for application Outdoor	No specific measures identified.
Material transfers. Drum/batch transfers non-dedicated facility	No specific measures identified.
Material transfers. Drum/batch transfers dedicated facility	No specific measures identified.
Roller, spreader, flow application. Indoor	No specific measures identified.
Roller, spreader, flow application. Outdoor	No specific measures identified.
Manual. Spraying. Indoor	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). or: Wear a respirator conforming to EN140 with Type A filter or better.
Manual. Spraying. Outdoor	Ensure operation is undertaken outdoors. Avoid carrying out activities involving exposure for more than 4 hours. or: Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Dipping, immersion and pouring. Indoor	Avoid manual contact with wet work pieces.
Dipping, immersion and pouring. Outdoor	Avoid manual contact with wet work pieces.
Laboratory activities	No specific measures identified.
Hand application - fingerpaints, pastels, adhesives. Indoor	No specific measures identified.
Hand application - fingerpaints, pastels, adhesives. Outdoor	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

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1. Exposure scenario

Uses in Coatings, Consumer.

Use Descriptor
Sector of use
SU21 - Private households (= general public = consumers)

Product category
PC1 - Adhesives, sealants
PC4 - Anti-Freeze and de-icing products
PC8 - Biocidal products (e.g. Disinfectants, pest control)
PC9 - Coatings and Paints, Fillers, Putties, Thinners
PC15 - Non-metal-surface treatment products
PC18 - Ink and toners
PC23 - Leather tanning, dye, finishing, impregnation and care products
PC24 - Lubricants, greases, release products
PC31 - Polishes and wax blends
PC34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.3c.v1.

Processes, tasks, activities covered
Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning. Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 6

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.985
Release fraction to wastewater from process (initial release prior to RMM): 0.01
Release fraction to soil from process (initial release prior to RMM): 0.005

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 1900
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics

Physical state

Liquid, vapour pressure > 10 Pa at STP

Vapour pressure

231 Pa

Concentration of substance in product

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

Amounts used

Unless otherwise stated, Covers use amounts up to (g) : 13800; Covers skin contact area up to (cm2): 857.5.

Frequency and duration of use

Unless otherwise stated, Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers exposure up to (hours/event):6

Other operational conditions affecting exposure

Unless otherwise stated, Assumes use at ambient temperature;
Assumes use in a 20 m3 room; Assumes use with typical ventilation.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures

Remarks

Not applicable.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures
PC1 - Adhesives, sealants. Glues, hobby use	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):30; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.73; For each use event, covers use amounts up to (g):9; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):4; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC1 - Adhesives, sealants. Glues DIY-use (carpet glue, tile glue, wood parquet glue)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):30; Covers use up to (days/year):1; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 110; For each use event, covers use amounts up to (g):6390; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):6; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC1 - Adhesives, sealants. Glue from spray	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):30; Covers use up to (days/year):6; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.73; For each use event, covers use amounts up to (g):85.05; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):4; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC1 - Adhesives, sealants. Sealants	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):30; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.73; For each use event, covers use amounts up to (g):75; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):1; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC4 - Anti-Freeze and de-icing products. Washing car window	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1; Covers use up to (days/year):365; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):0.5; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.02; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC4 - Anti-Freeze and de-icing products. Pouring into radiator	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):10; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428; For each use event, covers use amounts up to (g):2000; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC4 - Anti-Freeze and de-icing products. Lock de-icer	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 214.4; For each use event, covers use amounts up to (g):4; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.25;

	Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC8 - Biocidal products (e.g. Disinfectants, pest control). Laundry and dish washing products	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):5; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):15; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.5; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC8 - Biocidal products (e.g. Disinfectants, pest control). Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):5; Covers use up to (days/year):128; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):27; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC8 - Biocidal products (e.g. Disinfectants, pest control). Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):15; Covers use up to (days/year):128; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428; For each use event, covers use amounts up to (g):35; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Waterborne latex wall paint	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1.5; Covers use up to (days/year):4; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):2760; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Solvent rich, high solid, water borne paint	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):27.5; Covers use up to (days/year):6; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):744; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Aerosol spray can	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):2; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):215; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Removers (paint-, glue-, wall paper-, sealant-remover)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):3; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):491; Covers use under typical household

	ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9b - Fillers, putties, plasters, modelling clay. Fillers and putty	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):2; Covers use up to (days/year):12; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.73; For each use event, covers use amounts up to (g):85; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):4; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9b - Fillers, putties, plasters, modelling clay. Plasters and floor equalizers	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):2; Covers use up to (days/year):12; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):13800; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9b - Fillers, putties, plasters, modelling clay. Modelling clay	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 254.4; For each use event, assumes swallowed amount of (g):1; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9c - Finger paints. Finger paints	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 254.4; For each use event, assumes swallowed amount of (g):1.35; Risk Management Measures: Avoid using at a product concentration greater than (%):5.
PC15 - Non-metal-surface treatment products. Waterborne latex wall paint	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1.5; Covers use up to (days/year):4; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):2760; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC15 - Non-metal-surface treatment products. Solvent rich, high solid, water borne paint	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):27.5; Covers use up to (days/year):6; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):744; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC15 - Non-metal-surface treatment products. Aerosol spray can	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):2; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):215; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.33;

	Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC15 - Non-metal-surface treatment products. Removers (paint-, glue-, wall paper-, sealant-remover)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):3; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):491; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC18 - Ink and toners. Inks and toners.	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):10; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 71.4; For each use event, covers use amounts up to (g):40; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC23 - Leather tanning, dye, finishing, impregnation and care products. Polishes, wax / cream (floor, furniture, shoes)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):29; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 430; For each use event, covers use amounts up to (g):56; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):1.23; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC23 - Leather tanning, dye, finishing, impregnation and care products. Polishes, spray (furniture, shoes)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):8; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 430; For each use event, covers use amounts up to (g):56; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC24 - Lubricants, greases, release products. Liquids	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):4; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 468; For each use event, covers use amounts up to (g):2200; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC24 - Lubricants, greases, release products. Pastes	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):20; Covers use up to (days/year):10; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 468; For each use event, covers use amounts up to (g):34; For each use event, Covers exposure up to (hours/event):4; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC24 - Lubricants, greases, release products. Spray Bottle	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):6; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):73; Covers use under typical household ventilation; Covers

	use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC31 - Polishes and wax blends. Polishes, wax / cream (floor, furniture, shoes)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):29; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 430; For each use event, covers use amounts up to (g):142; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):1.23; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC31 - Polishes and wax blends. Polishes, spray (furniture, shoes)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):8; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 430; For each use event, covers use amounts up to (g):35; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC34 - Textile dyes, finishing and impregnating products; including bleaches and other processing aids	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):10; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):115; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):1; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

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1. Exposure scenario

Use in Cleaning Agents, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC7 - Industrial spraying
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10 - Roller application or brushing
PROC13 - Treatment of articles by dipping and pouring

Environmental release category
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
ESVOC SpERC 4.4a.v1.

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 5000

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 1
Release fraction to wastewater from process (initial release prior to RMM): 0.0000003
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 4600000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Bulk transfers	No specific measures identified.
Automated process with (semi) closed systems. Use in contained systems	No specific measures identified.
Automated process with (semi) closed systems. Drum/batch transfers	No specific measures identified.
Application of cleaning products in closed systems	No specific measures identified.
Filling / preparation of equipment from drums or containers.	No specific measures identified.
Use in contained batch processes	No specific measures identified.
Degreasing small objects in cleaning station	No specific measures identified.
Cleaning with low-pressure washers	No specific measures identified.
Cleaning with high pressure washers	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). or: Wear a respirator conforming to EN140 with Type A filter or better.
Manual. Surfaces. Cleaning	No specific measures identified.
Storage	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

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1. Exposure scenario

Use in Cleaning Agents, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC10 - Roller application or brushing
PROC11 - Non industrial spraying
PROC13 - Treatment of articles by dipping and pouring

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.4b.v1.

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.47

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.02
Release fraction to wastewater from process (initial release prior to RMM): 0.000001
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater

No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 470
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Filling / preparation of equipment from drums or containers. dedicated facility	No specific measures identified.
Automated process with (semi) closed systems. Use in contained systems	No specific measures identified.
Automated process with (semi) closed systems. Drum/batch transfers. Use in contained systems	No specific measures identified.
Semi-automated process (e.g. Semi-automatic application of floor care and maintenance products)	No specific measures identified.
Filling / preparation of equipment from drums or containers. non-dedicated facility	No specific measures identified.
Manual. Surfaces. Cleaning. Dipping, immersion and pouring	No specific measures identified.
Cleaning with low-pressure washers. Rolling, Brushing, no spraying	No specific measures identified.
Cleaning with high pressure washers. Spraying. Indoor	Provide a good standard of controlled ventilation (10 to 15 air changes per hour). or: Wear a respirator conforming to EN140 with Type A filter or better.
Cleaning with high pressure washers. Spraying. Outdoor	Ensure operation is undertaken outdoors. Limit the substance content in the product to 25 %. or: Wear a respirator conforming to EN140 with Type A filter or better.
Manual. Surfaces. Cleaning. Spraying	No specific measures identified.
Ad hoc manual application via trigger sprays, dipping, etc. Rolling, Brushing	No specific measures identified.
Application of cleaning products in closed systems. Outdoor	No specific measures identified.
Cleaning of medical devices	No specific measures identified.
Storage	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions

outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

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1. Exposure scenario

Use in Cleaning Agents, Consumer.

Use Descriptor
Sector of use
SU21 - Private households (= general public = consumers)

Product category
PC3 - Air care products
PC4 - Anti-Freeze and de-icing products
PC8 - Biocidal products (e.g. Disinfectants, pest control)
PC9 - Coatings and Paints, Fillers, Putties, Thinners
PC24 - Lubricants, greases, release products
PC35 - Washing and cleaning products (including solvent based products)
PC38 - Welding and soldering products (with flux coatings or flux cores.), flux products

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.4c.v1.

Processes, tasks, activities covered
Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.068

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.95
Release fraction to wastewater from process (initial release prior to RMM): 0.025
Release fraction to soil from process (initial release prior to RMM): 0.025

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 63

Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal

External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste

External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics

Physical state

Liquid, vapour pressure > 10 Pa at STP

Vapour pressure

231 Pa

Concentration of substance in product

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

Amounts used

Unless otherwise stated, Covers use amounts up to (g) : 13800; Covers skin contact area up to (cm2): 857.5.

Frequency and duration of use

Unless otherwise stated, Covers use up to (days/year):365; Covers use up to (times/day of use):4; Covers exposure up to (hours/event):8

Other operational conditions affecting exposure

Unless otherwise stated, Assumes use at ambient temperature;
Assumes use in a 20 m3 room; Assumes use with typical ventilation.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures

Remarks

Not applicable.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures
PC3 - Air care products. Air care, instant action (aerosol sprays)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):4; For each use event, covers use amounts up to (g):0.1; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.25; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC3 - Air care products. Air care, instant action (aerosol sprays). Pesticide, excipient only	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):4; For each use event, covers use amounts up to (g):0.5; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.25; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC3 - Air care products. Air care, continuous action (solid and liquid)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):10; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.7; For each use event, covers use amounts up to (g):0.48; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):8; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC3 - Air care products. Air care, continuous action (solid and liquid). Pesticide, excipient only	Operating conditions: Unless otherwise stated; Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.7; For each use event, covers use amounts up to (g):0.48; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):8; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC4 - Anti-Freeze and de-icing products. Washing car window	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1; Covers use up to (days/year):365; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):0.5; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.02; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC4 - Anti-Freeze and de-icing products. Pouring into radiator	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):10; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428; For each use event, covers use amounts up to (g):2000; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC4 - Anti-Freeze and de-icing products. Lock de-icer	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 214.4; For each use event, covers use amounts up to (g):4; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.25; Risk Management Measures: No specific risk management measure identified

	beyond those operational conditions stated.
PC8 - Biocidal products (e.g. Disinfectants, pest control). Laundry and dish washing products	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):5; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):15; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.5; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC8 - Biocidal products (e.g. Disinfectants, pest control). Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):5; Covers use up to (days/year):128; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):27; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC8 - Biocidal products (e.g. Disinfectants, pest control). Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):15; Covers use up to (days/year):128; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428; For each use event, covers use amounts up to (g):35; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Waterborne latex wall paint	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1.5; Covers use up to (days/year):4; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):2760; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Solvent rich, high solid, water borne paint	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):27.5; Covers use up to (days/year):6; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):744; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2.2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Aerosol spray can	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):2; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):215; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9a - Coatings and paints, thinners, paint removers. Removers (paint-, glue-, wall paper-, sealant-remover)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):3; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):491; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2;

	Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9b - Fillers, putties, plasters, modelling clay. Fillers and putty	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):2; Covers use up to (days/year):12; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 35.73; For each use event, covers use amounts up to (g):85; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):4; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9b - Fillers, putties, plasters, modelling clay. Plasters and floor equalizers	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):2; Covers use up to (days/year):12; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):13800; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9b - Fillers, putties, plasters, modelling clay. Modelling clay	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):1; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 254.4; For each use event, assumes swallowed amount of (g):1; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC9c - Finger paints. Finger paints	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 254.4; For each use event, assumes swallowed amount of (g):1.35; Risk Management Measures: Avoid using at a product concentration greater than (%):5.
PC24 - Lubricants, greases, release products. Liquids	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):4; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 468; For each use event, covers use amounts up to (g):2200; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC24 - Lubricants, greases, release products. Pastes	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):20; Covers use up to (days/year):10; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 468; For each use event, covers use amounts up to (g):34: For each use event, Covers exposure up to (hours/event):4; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC24 - Lubricants, greases, release products. Sprays	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):50; Covers use up to (days/year):6; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428.75; For each use event, covers use amounts up to (g):73; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified

	beyond those operational conditions stated.
PC35 - Washing and cleaning products (including solvent based products). Laundry and dish washing products	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):5; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):15; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.5; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC35 - Washing and cleaning products (including solvent based products). Cleaners, liquids (all purpose cleaners, sanitary products, floor cleaners, glass cleaners, carpet cleaners, metal cleaners)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):5; Covers use up to (days/year):128; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 857.5; For each use event, covers use amounts up to (g):27; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.33; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC35 - Washing and cleaning products (including solvent based products). Cleaners, trigger sprays (all purpose cleaners, sanitary products, glass cleaners)	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):15; Covers use up to (days/year):128; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 428; For each use event, covers use amounts up to (g):35; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.17; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC38 - Welding and soldering products (with flux coatings or flux cores.), flux products	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):20; Covers use up to (days/year):365; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):12; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):1; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

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1. Exposure scenario

Lubricant, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC7 - Industrial spraying
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC13 - Treatment of articles by dipping and pouring
PROC17 - Lubrication at high energy conditions and in partly open process
PROC18 - Greasing at high energy conditions

Environmental release category
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category
ESVOC SpERC 4.6a.v1.

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

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 500

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.005
Release fraction to wastewater from process (initial release prior to RMM): 0.000003
Release fraction to soil from process (initial release prior to RMM): 0.001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 460000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained systems	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Bulk transfers;	No specific measures identified.
Filling / preparation of equipment from drums or containers. non-dedicated facility	No specific measures identified.
Filling / preparation of equipment from drums or containers. dedicated facility	No specific measures identified.
Initial factory fill of equipment	No specific measures identified.
Operation and lubrication of high energy open equipment. - PROC 17	No specific measures identified.
Operation and lubrication of high energy open equipment - PROC 18	No specific measures identified.
Rolling, Brushing	No specific measures identified.
Treatment by dipping and pouring	Allow time for product to drain from workpiece.
Spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Maintenance (of larger plant items) and machine set up	No specific measures identified.
Maintenance (of larger plant items) and machine set up. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Maintenance of small items	No specific measures identified.
Remanufacture of reject articles	No specific measures identified.
Storage	Store substance within a closed system.
Storage with occasional controlled exposure.	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES6PHIGHK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Lubricant, Professional: High environmental release.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC11 - Non industrial spraying
PROC13 - Treatment of articles by dipping and pouring
PROC17 - Lubrication at high energy conditions and in partly open process
PROC18 - Greasing at high energy conditions
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.6c.v1.

Processes, tasks, activities covered
Covers the use of formulated lubricants in open systems including material transfers operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.048

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.15
Release fraction to wastewater from process (initial release prior to RMM): 0.05
Release fraction to soil from process (initial release prior to RMM): 0.05

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 43
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Bulk transfers;	No specific measures identified.
Filling / preparation of equipment from drums or containers. dedicated facility	No specific measures identified.
Filling / preparation of equipment from drums or containers. non-dedicated facility	No specific measures identified.
Operation and lubrication of high energy open equipment. Outdoor	No specific measures identified.
Operation and lubrication of high energy open equipment. Indoor	No specific measures identified.
Operation and lubrication of high energy open equipment - PROC 18	No specific measures identified.
Rolling, Brushing	No specific measures identified.
Treatment by dipping and pouring	No specific measures identified.
Spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Maintenance (of larger plant items) and machine set up	No specific measures identified.
Maintenance (of larger plant items) and machine set up. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Maintenance of small items. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	Drain or remove substance from equipment prior to break-in or maintenance.
Engine lubricant service	No specific measures identified.
Storage	No specific measures identified.
Storage with occasional controlled exposure.	No specific measures identified.
Operation of equipment containing engine oils and similar	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES6PLOWK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Lubricant, Professional: Low environmental release.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC11 - Non industrial spraying
PROC13 - Treatment of articles by dipping and pouring
PROC17 - Lubrication at high energy conditions and in partly open process
PROC18 - Greasing at high energy conditions
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems

Environmental release category
ERC9a - Wide dispersive indoor use of substances in closed systems
ERC9b - Wide dispersive outdoor use of substances in closed systems

Specific Environmental Release Category
ESVOC SpERC 9.6b.v1.

Processes, tasks, activities covered
Covers the use of formulated lubricants within closed or contained systems including incidental exposures during material transfers, operation of engines and similar articles, equipment maintenance and disposal of waste oil.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used
:

Maximum daily site tonnage (kg/day): 365

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.01
Release fraction to wastewater from process (initial release prior to RMM): 0.01
Release fraction to soil from process (initial release prior to RMM): 0.01

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 46
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Bulk transfers	No specific measures identified.
Filling / preparation of equipment from drums or containers. dedicated facility	No specific measures identified.
Filling / preparation of equipment from drums or containers. non-dedicated facility	No specific measures identified.
Operation and lubrication of high energy open equipment. Outdoor	No specific measures identified.
Operation and lubrication of high energy open equipment. Indoor	No specific measures identified.
Operation and lubrication of high energy open equipment - PROC 18	No specific measures identified.
Rolling, Brushing	No specific measures identified.
Treatment by dipping and pouring	No specific measures identified.
Spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Maintenance (of larger plant items) and machine set up	No specific measures identified.
Maintenance (of larger plant items) and machine set up. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Maintenance of small items. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	Drain or remove substance from equipment prior to break-in or maintenance.
Engine lubricant service	No specific measures identified.
Storage	No specific measures identified.
Storage with occasional controlled exposure.	No specific measures identified.
Operation of equipment containing engine oils and similar	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES7IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Metal working fluids / rolling oils, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC7 - Industrial spraying
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC13 - Treatment of articles by dipping and pouring
PROC17 - Lubrication at high energy conditions and in partly open process

Environmental release category
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
ESVOC SpERC 4.7a.v1.

Processes, tasks, activities covered
Covers the use in formulated MWFs/rolling oils including transfer operations, rolling and annealing activities, cutting/machining activities, automated and manual application of corrosion protections (including brushing, dipping and spraying), equipment maintenance, draining and disposal of waste oils.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 5000

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.02
Release fraction to wastewater from process (initial release prior to RMM): 0.000003
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment.
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 70
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 2900000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Bulk transfers;	No specific measures identified.
Filling / preparation of equipment from drums or containers. dedicated facility	No specific measures identified.
Filling / preparation of equipment from drums or containers. Mixing operations (open systems)	No specific measures identified.
Filling / preparation of equipment from drums or containers. - PROC 9	No specific measures identified.
Process sampling	No specific measures identified.
Metal machining operations	No specific measures identified.
Treatment by dipping and pouring	No specific measures identified.
Spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Rolling, Brushing	No specific measures identified.
Automated metal rolling/forming. Use in contained systems. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Semi-automated metal rolling/forming. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Semi-automated metal rolling/forming. dedicated facility	No specific measures identified.
Equipment cleaning and maintenance; dedicated facility	No specific measures identified.
Equipment cleaning and maintenance; non-dedicated facility	No specific measures identified.
Storage	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES7PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Metal working fluids / rolling oils, Professional: High environmental release.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC11 - Non industrial spraying
PROC13 - Treatment of articles by dipping and pouring
PROC17 - Lubrication at high energy conditions and in partly open process

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.7c.v1.

Processes, tasks, activities covered
Covers the use in formulated MWFs including transfer operations, open and contained cutting/machining activities, automated and manual application of corrosion protections, draining and working on contaminated/ reject articles, and disposal of waste oils.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.025

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.15
Release fraction to wastewater from process (initial release prior to RMM): 0.05
Release fraction to soil from process (initial release prior to RMM): 0.05

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

Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 24
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
General exposures (closed systems)	Handle substance within a closed system.
General exposures (closed systems) with occasional controlled exposure.	Handle substance within a closed system.
General exposures (closed systems). Use in contained batch processes	Handle substance within a closed system.
Filling / preparation of equipment from drums or containers. Mixing operations (open systems)	No specific measures identified.
Bulk transfers;	No specific measures identified.
Filling / preparation of equipment from drums or containers. dedicated facility	No specific measures identified.
Filling / preparation of equipment from drums or containers. non-dedicated facility	No specific measures identified.
Filling / preparation of equipment from drums or containers. dedicated facility - PROC 9	No specific measures identified.
Process sampling	Use dedicated equipment.
Metal machining operations	No specific measures identified.
Treatment by dipping and pouring	Allow time for product to drain from workpiece.
Spraying	Provide a good standard of controlled ventilation (10 to 15 air changes per hour); or: Wear a respirator conforming to EN140 with Type A/P2 filter or better.
Rolling, Brushing	No specific measures identified.
Equipment cleaning and maintenance; dedicated facility	No specific measures identified.
Equipment cleaning and maintenance; non-dedicated facility	No specific measures identified.
Storage	Store substance within a closed system.
Storage with occasional controlled exposure.	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES12CK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Use as a fuel, Consumer.

Use Descriptor
Sector of use
SU21 - Private households (= general public = consumers)

Product category
PC13 - Fuels

Environmental release category
ERC9a - Wide dispersive indoor use of substances in closed systems
ERC9b - Wide dispersive outdoor use of substances in closed systems

Specific Environmental Release Category
ESVOC SpERC 9.12c.v1.

Processes, tasks, activities covered
Covers consumer uses in liquid fuels.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.04

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.0001
Release fraction to wastewater from process (initial release prior to RMM): 0.00001
Release fraction to soil from process (initial release prior to RMM): 0.00001

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 39
Assumed domestic sewage treatment plant flow (m3/d): 2000
Conditions and measures related to external treatment of waste for disposal
Combustion emissions limited by required exhaust emission controls. Combustion emissions considered in regional exposure assessment.

Conditions and measures related to external recovery of waste
This substance is consumed during use and no waste of the substance is generated.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure > 10 Pa at STP

Vapour pressure
231 Pa
Concentration of substance in product
Covers percentage substance in the product up to 100 % (unless stated differently).

Amounts used
Unless otherwise stated, Covers use amounts up to (g) : 37500; Covers skin contact area up to (cm2): 420.
Frequency and duration of use
Unless otherwise stated, Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers exposure up to (hours/event):2

Other operational conditions affecting exposure
Unless otherwise stated, Assumes use at ambient temperature;
Assumes use in a 20 m3 room; Assumes use with typical ventilation.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures

Remarks
Not applicable.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures
PC13 - Fuels. Liquid: Automotive Refuelling	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):52; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 210; For each use event, covers use amounts up to (g):37500; Covers outdoor use; Covers use in room size of (m3):100; For each use event, Covers exposure up to (hours/event):0.05; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC13 - Fuels. Liquid Scooter Refuelling	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):52; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 210; For each use event, covers use amounts up to (g):3750; Covers outdoor use; Covers use in room size of (m3):100; For each use event, Covers exposure up to (hours/event):0.03; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC13 - Fuels. Liquid Garden Equipment - Use	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):26; Covers use up to (times/day of use):1; For each use event, covers use amounts up to (g):750; Covers outdoor use; Covers use in room size of (m3):100; For each use event, Covers exposure up to (hours/event):2; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC13 - Fuels. Liquid: Garden Equipment - Refueling	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):26; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 420; For each use event, covers use amounts up to (g):750; Covers use in a one car garage (34 m3) under typical ventilation; Covers use in room size of (m3):34; For each use event, Covers exposure up to (hours/event):0.03; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC13 - Fuels. Liquid: Home space heater fuel	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):365; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 210; For each use event, covers use amounts up to (g):3000; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.03; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.
PC13 - Fuels. Lamp oil	Operating conditions: Unless otherwise stated, Covers concentrations up to (%):100; Covers use up to (days/year):52; Covers use up to (times/day of use):1; Covers skin contact area up to (cm2): 210; For each use event, covers use amounts up to (g):100; Covers use under typical household ventilation; Covers use in room size of (m3):20; For each use event, Covers exposure up to (hours/event):0.01; Risk Management Measures: No specific risk management measure identified beyond those operational conditions stated.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated.

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES13IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Functional Fluids, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Environmental release category
ERC7 - Industrial use of substances in closed systems

Specific Environmental Release Category
ESVOC SpERC 7.13a.v1.

Processes, tasks, activities covered
Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 500

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.005
Release fraction to wastewater from process (initial release prior to RMM): 0.000003
Release fraction to soil from process (initial release prior to RMM): 0.001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 460000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Bulk transfers (closed systems)	No specific measures identified.
Bulk transfers (closed systems) with occasional controlled exposure.	No specific measures identified.
Drum/batch transfers	No specific measures identified.
Filling of articles/equipment (closed systems)	No specific measures identified.
Filling / preparation of equipment from drums or containers.	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
Remanufacture of reject articles	No specific measures identified.
Equipment maintenance	No specific measures identified.
Storage	No specific measures identified.
Storage with occasional controlled exposure.	No specific measures identified.
General exposures (open systems)	No specific measures identified.

2.2b. Control of consumer exposure	
Product Category(ies)	**Operational conditions and risk management measures**

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES13PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Functional Fluids, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC20 - Heat and pressure transfer fluids in dispersive, professional use but closed systems

Environmental release category
ERC9a - Wide dispersive indoor use of substances in closed systems
ERC9b - Wide dispersive outdoor use of substances in closed systems

Specific Environmental Release Category
ESVOC SpERC 9.13b.v1.

Processes, tasks, activities covered
Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.14

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.05
Release fraction to wastewater from process (initial release prior to RMM): 0.025
Release fraction to soil from process (initial release prior to RMM): 0.025

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 120
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Drum/batch transfers;	No specific measures identified.
Transfer from/pouring from containers	No specific measures identified.
General exposures (closed systems)	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
Filling / preparation of equipment from drums or containers.	No specific measures identified.
General exposures (closed systems) with occasional controlled exposure.	No specific measures identified.
Operation of equipment containing engine oils and similar - PROC 20	No specific measures identified.
Remanufacture of reject articles	No specific measures identified.
Equipment maintenance;	No specific measures identified.
Storage	Store substance within a closed system.
Storage with occasional controlled exposure.	Store substance within a closed system.
Operation of equipment containing engine oils and similar. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES15PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Road and construction applications, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10 - Roller application or brushing
PROC11 - Non industrial spraying
PROC13 - Treatment of articles by dipping and pouring

Environmental release category
ERC8d - Wide dispersive outdoor use of processing aids in open systems
ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Specific Environmental Release Category
ESVOC SpERC 8.15.v1.

Processes, tasks, activities covered
Application of surface coatings and binders in road and construction activities, including paving uses, manual mastic and in the application of roofing and water-proofing membranes.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.25

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.95
Release fraction to wastewater from process (initial release prior to RMM): 0.01
Release fraction to soil from process (initial release prior to RMM): 0.04

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 230
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Drum/batch transfers; non-dedicated facility	No specific measures identified.
Drum/batch transfers; dedicated facility	Use dedicated equipment. Clear transfer lines prior to de-coupling.
Drum/batch transfers, dedicated facility. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	Use dedicated equipment. Clear transfer lines prior to de-coupling.
Rolling, Brushing	No specific measures identified.
Spraying/fogging by machine application. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	Ensure operation is undertaken outdoors. Wear a respirator conforming to EN140 with Type A filter or better.
Spraying/fogging by machine application	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Dipping, immersion and pouring	No specific measures identified.
Equipment cleaning and maintenance; non-dedicated facility	Retain drain downs in sealed storage pending disposal or for subsequent recycle.
Drum and small package filling	No specific measures identified.

2.2b. Control of consumer exposure	
Product Category(ies)	**Operational conditions and risk management measures**

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES17IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Use in laboratories, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC10 - Roller application or brushing
PROC15 - Use as laboratory reagent

Environmental release category
ERC2 - Formulation of preparations
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
Not applicable.

Processes, tasks, activities covered
Use of the substance within laboratory settings, including material transfers and equipment cleaning.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.5

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.025
Release fraction to wastewater from process (initial release prior to RMM): 0.02
Release fraction to soil from process (initial release prior to RMM): 0.0001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 340
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Laboratory activities. small scale	No specific measures identified.
Cleaning. Rolling, Brushing. Vessel and container cleaning	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to

define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet
(http://cefic.org/en/reach-for-industries-libraries html).

TFGES17PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Use in laboratories, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC10 - Roller application or brushing
PROC15 - Use as laboratory reagent

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.17.v1.

Processes, tasks, activities covered
Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.000014

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.5
Release fraction to wastewater from process (initial release prior to RMM): 0.5
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 0.014
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Laboratory activities. small scale	No specific measures identified.
Cleaning. Rolling, Brushing. Vessel and container cleaning	No specific measures identified.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES19IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Rubber production and processing, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC6 - Calendering operations
PROC7 - Industrial spraying
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13 - Treatment of articles by dipping and pouring
PROC14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC15 - Use as laboratory reagent
PROC21 - Low energy manipulation of substances bound in materials and/or articles

Environmental release category
ERC1 - Manufacture of substances
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles
ERC6d - Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

Specific Environmental Release Category
ESVOC SpERC 4.19.v1.

Processes, tasks, activities covered
Manufacture of tyres and general rubber articles, including processing of raw (uncured) rubber, handling and mixing of rubber additives, calendaring, vulcanising, cooling and finishing as well as maintenance.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 1700

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.01

Release fraction to wastewater from process (initial release prior to RMM): 0.00003
Release fraction to soil from process (initial release prior to RMM): 0.0001

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment.
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils.
Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 640000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Material transfers (closed systems)	No specific measures identified.
Material transfers (closed systems) with occasional controlled exposure.	No specific measures identified.
Material transfers; dedicated facility	No specific measures identified.
Bulk weighing (closed systems)	Handle substance within a closed system.
Bulk weighing with occasional controlled exposure.	Handle substance within a closed system.
Small scale weighing	No specific measures identified.
Additive premixing. Use in contained batch processes	No specific measures identified.
Additive premixing. Batch process	No specific measures identified.
Additive premixing. Mixing operations (open systems)	No specific measures identified.
Material transfers - PROC 9	No specific measures identified.
Calendering (including Banburys). Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Pressing uncured rubber blanks	No specific measures identified.
Tyre build up	Provide a good standard of controlled ventilation (10 to 15 air changes per hour).
Vulcanisation. Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Vulcanisation. Operation is carried out at elevated temperature (> 20°C above ambient temperature). Manual	No specific measures identified.
Cooling cured articles	No specific measures identified.
Production of articles by dipping and pouring	No specific measures identified.
Finishing operations	No specific measures identified.
Laboratory activities	No specific measures identified.
Equipment maintenance	No specific measures identified.
Storage	Store substance within a closed system.
Storage with occasional controlled exposure.	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES21IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Water treatment chemicals, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC13 - Treatment of articles by dipping and pouring

Environmental release category
ERC3 - Formulation in materials
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
ESVOC SpERC 3.22a.v1 .

Processes, tasks, activities covered
Covers the use of the substance for the treatment of water at industrial facilities in open and closed systems.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 37

Frequency and duration of use Continuous release
Emission Days (days/year): 300

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.05
Release fraction to wastewater from process (initial release prior to RMM): 0.95
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater sediment.
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 96.6

If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 46.3

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 96.6
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 37
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Bulk transfers. Use in contained systems	Transfer via enclosed lines.
Drum/batch transfers;	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems).	No specific measures identified.
Pouring from small containers	No specific measures identified.
Equipment maintenance.	No specific measures identified.
Storage	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment

The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health

Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.

Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment

Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.

Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.

Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES21PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Water treatment chemicals, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC13 - Treatment of articles by dipping and pouring

Environmental release category
ERC8f - Wide dispersive outdoor use resulting in inclusion into or onto a matrix

Specific Environmental Release Category
ESVOC SpERC 8.22b.v1.

Processes, tasks, activities covered
Covers the use of the substance for the treatment of water in open and closed systems.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 4

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.01
Release fraction to wastewater from process (initial release prior to RMM): 0.99
Release fraction to soil from process (initial release prior to RMM): 0

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by soil.
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 69.8
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 19
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Amounts used
No limit.
Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Drum/batch transfers;	No specific measures identified.
General exposures (closed systems). Use in contained batch processes	No specific measures identified.
General exposures (open systems)	No specific measures identified.
Pouring from small containers	No specific measures identified.
Equipment cleaning and maintenance;	No specific measures identified.
Storage	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES23IK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Polymer processing, Industrial.

Use Descriptor
Sector of use
SU3 - Industrial Manufacturing (all)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC3 - Use in closed batch process (synthesis or formulation)
PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
PROC6 - Calendering operations
PROC8a - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b - Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC13 - Treatment of articles by dipping and pouring
PROC14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC21 - Low energy manipulation of substances bound in materials and/or articles

Environmental release category
ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

Specific Environmental Release Category
ESVOC SpERC 4.21a.v1 .

Processes, tasks, activities covered
Processing of formulated polymers including material transfers, additives handling (e.g. pigments, stabilisers, fillers, plasticisers, etc.), moulding, curing and forming activities, material re-works, storage and associated maintenance.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 15000

Frequency and duration of use Continuous release
Emission Days (days/year): 20

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.25
Release fraction to wastewater from process (initial release prior to RMM): 0
Release fraction to soil from process (initial release prior to RMM): 0.00001

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

Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): 80
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 15000000
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Bulk transfers (closed systems)	No specific measures identified.
Bulk transfers (closed systems) with occasional controlled exposure.	No specific measures identified.
Bulk transfers; dedicated facility	No specific measures identified.
Bulk weighing (closed systems)	No specific measures identified.
Bulk weighing with occasional controlled exposure.	No specific measures identified.
Small scale weighing	No specific measures identified.
Additive premixing. Use in contained batch processes	No specific measures identified.
Additive premixing Batch process	No specific measures identified.
Additive premixing. Mixing operations (open systems)	No specific measures identified.
Bulk transfers - PROC 9	No specific measures identified.
Calendering (including Banburys). Operation is carried out at elevated temperature (> 20°C above ambient temperature)	No specific measures identified.
Production of articles by dipping and pouring	No specific measures identified.
Extrusion and masterbatching	No specific measures identified.
Injection moulding of articles	No specific measures identified.
Finishing operations	No specific measures identified.
Equipment maintenance	No specific measures identified.
Storage	Store substance within a closed system.
Storage with occasional controlled exposure.	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions

outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).

TFGES23PK3C9C12NIC2-25ARO
Version 1.1

1. Exposure scenario

Polymer processing, Professional.

Use Descriptor
Sector of use
SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Process category
PROC1 - Use in closed process, no likelihood of exposure
PROC2 - Use in closed, continuous process with occasional controlled exposure
PROC6 - Calendering operations
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
PROC14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation
PROC21 - Low energy manipulation of substances bound in materials and/or articles

Environmental release category
ERC8a - Wide dispersive indoor use of processing aids in open systems
ERC8d - Wide dispersive outdoor use of processing aids in open systems

Specific Environmental Release Category
ESVOC SpERC 8.21b.v1.

Processes, tasks, activities covered
Processing of formulated polymers including material transfers, moulding and forming activities, material re-works and associated maintenance.

2. Operational conditions and risk management measures

2.1. Control of environmental exposure

Product characteristics
Substance is complex UVCB. Predominantly hydrophobic.

Amounts used

Maximum daily site tonnage (kg/day): 0.38

Frequency and duration of use Continuous release
Emission Days (days/year): 365

Environment factors not influenced by risk management

Local freshwater dilution factor: 10
Local marine water dilution factor: 100

Other operational conditions of use affecting environmental exposure
.

Release fraction to air from process (initial release prior to RMM): 0.98
Release fraction to wastewater from process (initial release prior to RMM): 0.01
Release fraction to soil from process (initial release prior to RMM): 0.01

Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil
Risk from environmental exposure is driven by freshwater
No wastewater treatment required

Treat air emission to provide a typical removal efficiency of (%): N/A

Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of (%): 0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%): 0

Organizational measures to prevent/limit release from the site
Prevent discharge of undissolved substance to or recover from onsite wastewater. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

Conditions and measures related to municipal sewage treatment plant

Estimated substance removal from wastewater via domestic sewage treatment (%): 93.7
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%): 93.7
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d): 320
Assumed domestic sewage treatment plant flow (m3/d): 2000

Conditions and measures related to external treatment of waste for disposal
External treatment and disposal of waste should comply with applicable local and/or national regulations.

Conditions and measures related to external recovery of waste
External recovery and recycling of waste should comply with applicable local and/or national regulations.

2.2. Control of exposure - Workers or Consumers

Product characteristics
Physical state
Liquid, vapour pressure < 0.5 kPa at STP

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

Frequency and duration of use
Covers daily exposures up to 8 hours (unless stated differently)

Other operational conditions affecting exposure
Assumes use at not more than 20°C above ambient temperature, unless stated differently.
Assumes a good basic standard of occupational hygiene is implemented.

2.2a. Control of worker exposure

Contributing Scenarios	Operational conditions and risk management measures
Bulk transfers (closed systems)	Handle substance within a closed system.
Bulk transfers (closed systems) with occasional controlled exposure.	Handle substance within a closed system.
Material transfers;	Transfer via enclosed lines.
Injection moulding of articles	No specific measures identified.
Rework of articles	No specific measures identified.
Equipment maintenance;	Drain or remove substance from equipment prior to break-in or maintenance.
Storage	Store substance within a closed system.
Storage with occasional controlled exposure.	Store substance within a closed system.

2.2b. Control of consumer exposure

Product Category(ies)	Operational conditions and risk management measures

Remarks
Not applicable.

3. Exposure estimation and references

Health

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated

Environment
The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

4. Guidance for Downstream User (DU) to check compliance with the Exposure scenario

Health
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented.
Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries html).