



# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

Revision date: 20/07/2020 Supersedes: 19/06/2019 Version: 8.0

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

#### 1.1. Product identifier

Product form	: Mixture
Trade name	: Eni Acer MV 10
Product code	: 7007
Type of product	: Lubricants
Formula	: 0164-2019
Product group	: Trade product

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

##### 1.2.1. Relevant identified uses

Main use category	: Industrial use, Professional use
Industrial/Professional use spec	: Wide dispersive use Used in closed systems
Use of the substance/mixture	: Functional fluids Hydraulic oil
Function or use category	: Lubricants and additives, Hydraulic fluids and additives

##### 1.2.2. Uses advised against

Recommended use are listed above; other uses are not recommended unless an assessment has provided that risks are controlled.

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

ENI S.p.A.  
P.le E. Mattei 1 - 00144 Rome Italy  
Phone: (+39) 06 59821  
www.eni.com

Contact:  
Refining & Marketing

Competent person responsible for the Safety Data Sheet (Reg. EC nr. 1907/2006): SDSInfo@eni.com

#### 1.4. Emergency telephone number

Emergency number	: CNIT +39 0382 24444 (24h) (IT + EN)
	Poison centre (UK): National Poisons Information Service Edinburgh (24h) (+44) 844 892 0111 0870 600 6266 (UK only) (Source: UN-WHO)

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]

Aspiration hazard, Category 1	H304
Hazardous to the aquatic environment —	H411
Chronic Hazard, Category 2	
Full text of H statements : see section 16	

##### Adverse physicochemical, human health and environmental effects

Aspiration into lungs can cause a chemical pneumonia. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects. For specific information about the toxicological/ecotoxicological properties and classification of this product, see Sect. 11 and/or Sect. 12.

# Eni Acer MV 10

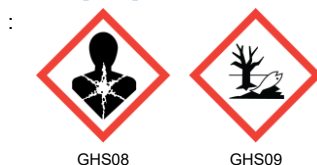
## Safety Data Sheet

According to Regulation (EU) No. 830/2015

### 2.2. Label elements

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

Hazard pictograms (CLP)



GHS08

GHS09

CLP Signal word

: Danger

Hazardous ingredients and/or with relevant occupational exposure limits

: White mineral oil (petroleum); Distillates (petroleum), solvent-refined light paraffinic

Hazard statements (CLP)

: H304 - May be fatal if swallowed and enters airways.  
H411 - Toxic to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P273 - Avoid release to the environment.  
P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.  
P331 - Do NOT induce vomiting.  
P391 - Collect spillage.  
P501 - Dispose of contents and container to according to national or local regulations.

### 2.3. Other hazards (not relevant for classification)

Other hazards not contributing to the classification

: This product is combustible, but not classified as Flammable. The creation of flammable vapour mixtures takes place at temperatures which are higher than normal ambient levels. In case of contact with eyes, this product may cause irritation. If the product is handled or used at high temperature, contact with hot product or vapours may cause burns. Do not wait for symptoms to develop. Any substance, in case of accidents involving pressurized circuits and the like, may be accidentally injected under the skin, even without external damage. In such a case, the victim should be brought to an hospital as soon as possible, to get specialized medical treatment. In exceptional cases (i.e prolonged storage in tanks contaminated with water, and presence of anaerobic sulfate-reducing microbial colonies), the product may undergo a degradation and generate small amounts of sulfur compounds, including H<sub>2</sub>S.

This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII

This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Not applicable

### 3.2. Mixtures

Notes

: Composition/ Information on ingredients:  
Mixture of hydrocarbons  
Additives

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]
Distillates (petroleum), solvent-refined light paraffinic (see note [*], see note [**])	(CAS-No.) 64741-89-5 (EC-No.) 265-091-3 (EC Index-No.) 649-455-00-2 (REACH-no) 01-2119487067-30	70 - 80	Asp. Tox. 1, H304
White mineral oil (petroleum)	(CAS-No.) 8042-47-5 (EC-No.) 232-455-8 (EC Index-No.) N/A (REACH-no) 01-2119487078-27	15 - 20	Asp. Tox. 1, H304
Phenol, isopropylated, phosphate (3:1) (Additive)	(CAS-No.) 68937-41-7 (EC-No.) 273-066-3 (EC Index-No.) N/A (REACH-no) 01-2119535109-41	1 - 1,5	Repr. 2, H361fd STOT RE 2, H373 Aquatic Chronic 1, H410 (M=10)

Notes

: Note [\*]:  
this product has a value of DMSO extract < 3 % wt, according to IP 346/92. According to the criteria laid out by the EU (note L, Annex VI of Regulation (CE) 1272/2008), this product must be regarded as non carcinogenic.  
Note [\*\*]:  
substance with occupational exposure limits for some EU countries affecting the category of mineral oils (finely refined mineral base oil mists; see section 8.1)

Full text of H-statements: see section 16

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

First-aid measures general	: In case of spontaneous vomiting, transport the victim to a hospital, to verify the possibility that the product has been aspired into the lungs.
First-aid measures after inhalation	: In case of disturbances owing to inhalation of vapours or mists, remove the victim from exposure; keep at rest; if necessary, seek medical attention. See also section 4.3.
First-aid measures after skin contact	: Take off contaminated clothing and shoes. Wash thoroughly with soap and water. If skin irritation occurs: Get medical advice/attention. In case of contact with hot product, cool affected part with plenty of cold water, and cover with gauze or clean cloth. Call a doctor or bring to an hospital. Do not use salves or ointments, unless directed by doctor. Do not put ice on the burn.
First-aid measures after eye contact	: Rinse eyes thoroughly for at least 15 minutes. Keep eyelids well apart. If irritation, blurred vision or swelling occurs and persists, obtain medical advice from a specialist. In case of contact with hot product, cool affected part with plenty of cold water, and cover with gauze or clean cloth. Call a doctor or bring to an hospital. Do not use salves or ointments, unless directed by doctor.
First-aid measures after ingestion	: Do not induce vomiting to avoid aspiration into the lungs. If the person is conscious, rinse mouth with water without swallowing. Keep at rest. Call for medical assistance or bring to an hospital. If the casualty is unconscious, place in the recovery position. In case of spontaneous vomiting, keep head low, to avoid the risk of aspiration into the lungs. Do not give anything by mouth to an unconscious person.

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

Symptoms/effects after inhalation	: This product has a low vapour pressure, and in normal conditions at ambient temperature the concentration in the air is negligible. A significant concentration may build up only if the product is used at high temperature, or in case of sprays and mists. In these cases overexposure to vapours may cause irritation to airways, nausea and dizziness.
Symptoms/effects after skin contact	: Contact with hot product may cause thermal burns.
Symptoms/effects after eye contact	: Contact with eyes may cause a light transient irritation. Contact with hot product or vapours may cause burns.
Symptoms/effects after ingestion	: Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.
Symptoms/effects upon intravenous administration	: No information available.
Chronic symptoms	: None to be reported, according to the present classification criteria.

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

Obtain medical attention if casualty has an altered state of consciousness or if symptoms do not resolve. Seek medical attention in all cases of serious burns. In case of ingestion, always assume that aspiration has occurred. Send the casualty immediately to hospital. If there is any suspicion of inhalation of H<sub>2</sub>S (hydrogen sulphide), Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures. Send patient to hospital. Immediately begin artificial respiration if breathing has ceased. Administer oxygen if necessary.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media	: Small-size fires: carbon dioxide, dry chemicals, foam, sand or earth. Large fires: foam or water fog (mist). These means should be used by trained personnel only. Other extinguishing gases (according to regulations).
Unsuitable extinguishing media	: Do not use water jets. They could cause splattering, and spread the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.

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

Fire hazard	: This product is combustible, but not classed as flammable. The creation of flammable vapour mixtures takes place at temperatures which are higher than normal ambient levels."
Explosion hazard	: In case of losses from pressurized circuits, the sprays may form mists. Take into account that in this case the lower explosion limit for mists is about 45 g/m <sup>3</sup> of air.
Hazardous decomposition products in case of fire	: Incomplete combustion will generate poisonous carbon monoxide, carbon dioxide and other toxic gases. Combustion products include sulphur oxides (SO <sub>2</sub> and SO <sub>3</sub> ) and Hydrogen sulphide H <sub>2</sub> S. Oxygenated compounds (aldehydes, etc.). POx.

#### 5.3. Advice for firefighters

Firefighting instructions	: Shut off source of product, if possible. Move undamaged containers from immediate hazard area if it can be done safely. Spilled product which is not burning should be covered with sand or foam. Use water sprays to cool containers and surfaces exposed to the flames. If the fire cannot be controlled, evacuate area.
Special protective equipment for firefighters	: Personal protection equipment for firefighters (see also sect. 8). In case of a large fire or in confined or poorly ventilated spaces, wear full fire resistant protective clothing and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. EN 443. EN 469. EN 659.
Other information	: In case of fire, do not discharge residual product, waste materials and runoff water: collect separately and use a proper treatment.

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

### SECTION 6: Accidental release measures

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

General measures : Stop or contain leak at the source, if safe to do so. Eliminate all ignition sources if safe to do so (e.g. electricity, sparks, fires, flares). Avoid direct contact with released material. Avoid accidental sprays on hot surfaces or electrical contacts. Keep upwind.

##### 6.1.1. For non-emergency personnel

Protective equipment : See Section 8.

Emergency procedures : Keep non-involved personnel away from the area of spillage. Alert emergency personnel. Except in case of small spillages, the feasibility of any actions should always be assessed and advised, if possible, by a trained, competent person in charge of managing the emergency.

##### 6.1.2. For emergency responders

Protective equipment : Small spillages: normal antistatic working clothes are usually adequate. Large spillages: full body suit of chemically resistant and antistatic material. If necessary heat resistant and insulated. Work gloves providing adequate chemical resistance, specifically to aromatic hydrocarbons. Gloves made of PVA are not water-resistant, and are not suitable for emergency use. If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated. Antistatic non-skid safety shoes or boots, chemical resistant, if necessary heat resistant and insulated. Work helmet. Goggles and /or face shield, if splashes or contact with eyes is possible or anticipated. Respiratory protection: A half or full-face respirator with filter(s) for organic vapours (A) (or A+B when applicable for H<sub>2</sub>S), or a Self-contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. A Self Contained Breathing Apparatus (SCBA) can be used according to the extent of spill and predictable amount of exposure. If the situation cannot be completely assessed, or if an oxygen deficiency is possible, only SCBA's should be used.

Emergency procedures : Notify local authorities according to relevant regulations.

#### 6.2. Environmental precautions

Do not let the product accumulate in confined or underground spaces. Do not let the product flow into sewers or water courses, or in any way contaminate the environment. In case of contamination of environment compartments (soil, subsoil, surface or underground waters), remove contaminated soil when possible, and in any case treat all involved compartments in accordance with local regulations. The site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

For containment : Contain spilled liquid with sand, earth or other suitable absorbents (non-flammable). Recover free liquid and waste materials in suitable waterproof and oil-resistant containers. Clean contaminated area. Dispose of according to local regulations. If in water: Confine the spillage. Remove from surface by skimming or suitable floating absorbents. Collect recovered product and other waste materials in suitable waterproof, oil resistant containers. Recover or dispose of according to local regulations. Do not use solvents or dispersants, unless specifically advised by an expert, and, if required, approved by local authorities.

Other information : Recommended measures are based on the most likely spillage scenarios for this material; however, local conditions (wind, air temperature, wave/current direction and speed) may significantly influence the choice of appropriate actions. Local regulations may also prescribe or limit actions to be taken. For this reason, local experts should be consulted when necessary.

#### 6.4. Reference to other sections

For further information refer to section 8: "Exposure controls/personal protection". For further information refer to section 13.

### SECTION 7: Handling and storage

#### 7.1. Precautions for safe handling

Precautions for safe handling : This material is combustible, but will not ignite readily. Provide adequate ventilation. Use adequate personal protective equipment as needed. Due to the extremely slippery nature of this material, more care than usual must be exercised in material handling practices to keep off all walking surfaces. Floors, walls and other surfaces in the hazard area must be cleaned regularly. Avoid release to the environment. Emptied containers can contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been drained and cleaned. The product may release Hydrogen Sulphide: a specific assessment of inhalation risks from the presence of hydrogen sulphide in tank headspaces, confined spaces, product residue, tank waste and waste water, and unintentional releases should be made to help determine controls appropriate to local circumstances. Before entering storage tanks and commencing any operation in a confined area (e.g. tunnels), carry out an adequate clean-up, and check the atmosphere for oxygen content, flammability, and the presence of sulphur compounds. See also Section 16, "Other information".

Hygiene measures : Ensure that proper housekeeping measures are in place. Avoid contact with skin. Do not breathe fume/ mist/ vapours. Do not ingest. Do not smoke. Do not eat and do not drink during use. Do not clean hands with dirty or oil-soaked rags. Do not re-use clothes, if they are still contaminated. Keep away from food and beverages. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Contaminated work clothing should not be allowed out of the workplace. Separate working clothes from town clothes. Launder separately.

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

Storage conditions	: Store in dry, well ventilated area. Keep away from open flames, hot surfaces and sources of ignition. Do not smoke.
Incompatible products	: Keep away from: strong oxidants.
Storage area	: Storage area layout, tank design, equipment and operating procedures must comply with the relevant European, national or local legislation. Storage installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Cleaning, inspection and maintenance of internal structure of storage tanks must be done only by properly equipped and qualified personnel as defined by national, local or company regulations.
Packages and containers:	: If the product is supplied in containers: Keep containers tightly closed and properly labelled. Keep only in the original container or in a suitable container for this kind of product.
Packaging materials	: For containers, or container linings use materials specifically approved for use with this product. Compatibility should be checked with the manufacturer.

### 7.3. Specific end use(s)

No information available.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)		
Austria	MAK (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Belgium	Limit value (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Denmark	Grænseværdi (langvarig) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Denmark	Grænseværdi (kortvarig) (mg/m <sup>3</sup> )	2 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Hungary	AK-érték	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Netherlands	MAC TGG 8h (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Spain	VLA-ED (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Spain	VLA-EC (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Sweden	Nivågränsvärde (NVG) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Sweden	Kortidsvärde (KTV) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
United Kingdom	WEL TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
United Kingdom	WEL STEL (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Canada (Quebec)	VECD (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Canada (Quebec)	VEMP (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - ACGIH	ACGIH TLV®-TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - ACGIH	ACGIH TLV®-STEL (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - NIOSH	NIOSH REL (STEL) (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
White mineral oil (petroleum) (8042-47-5)		
Austria	MAK (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (Inhalable aerosol)
Belgium	Limit value (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
Denmark	Grænseværdi (langvarig) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (mineral oil mists)
Denmark	Grænseværdi (kortvarig) (mg/m <sup>3</sup> )	2 mg/m <sup>3</sup> (mineral oil mists)

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

White mineral oil (petroleum) (8042-47-5)		
Hungary	AK-érték	5 mg/m <sup>3</sup> (mineral oil mists)
Netherlands	MAC TGG 8h (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
Spain	VLA-ED (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
Spain	VLA-EC (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (mineral oil mists)
Sweden	Nivågränsvärde (NVG) (mg/m <sup>3</sup> )	1 mg/m <sup>3</sup> (mineral oil mists)
Sweden	Kortidsvärde (KTV) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (mineral oil mists)
United Kingdom	WEL TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
United Kingdom	WEL STEL (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (mineral oil mists)
Canada (Quebec)	VECD (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
Canada (Quebec)	VEMP (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (mineral oil mists)
USA - ACGIH	ACGIH TLV®-TWA (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
USA - NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	5 mg/m <sup>3</sup> (mineral oil mists)
USA - NIOSH	NIOSH REL (STEL) (mg/m <sup>3</sup> )	10 mg/m <sup>3</sup> (mineral oil mists)
USA - OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	5 (mineral oil mists)

Phenol, isopropylated, phosphate (3:1) (68937-41-7)		
Austria	MAK (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Austria	MAK Short time value (mg/m <sup>3</sup> )	6 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Belgium	Limit value (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Denmark	Grænseværdi (langvarig) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Denmark	Grænseværdi (kortvarig) (mg/m <sup>3</sup> )	6 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Finland	HTP-arvo (8h) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Finland	HTP-arvo (15 min) (mg/m <sup>3</sup> )	6 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
France	VME (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Ireland	OEL (8 hours ref) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
Spain	VLA-ED (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
United Kingdom	WEL TWA (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
USA - ACGIH	ACGIH TLV®-TWA (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
USA - NIOSH	NIOSH REL (TWA) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)
USA - OSHA	OSHA PEL (TWA) (mg/m <sup>3</sup> )	3 mg/m <sup>3</sup> (Reference: CAS 115-86-6, Triphenylphosphate)

Monitoring methods	
Monitoring methods	Monitoring procedures should be chosen according to the indications set by national authorities or labour contracts, Refer to relevant legislation and in any case to the good practice of industrial hygiene.

Eni Acer MV 10	
DNEL/DMEL (additional information)	
Additional information	Not applicable
PNEC (additional information)	
Additional information	Not applicable

Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	0,97 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	2,73 mg/m <sup>3</sup>
Long-term - local effects, inhalation	5,58 mg/m <sup>3</sup>

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

<b>Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)</b>	
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	0,74 mg/kg bodyweight/day
Long-term - local effects, inhalation	1,19 mg/m <sup>3</sup>
PNEC (Oral)	
PNEC oral (secondary poisoning)	9,33 mg/kg food
<b>White mineral oil (petroleum) (8042-47-5)</b>	
DNEL/DMEL (Workers)	
Long-term - systemic effects, dermal	220 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	160 mg/m <sup>3</sup>
DNEL/DMEL (General population)	
Long-term - systemic effects, oral	40 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	35 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	92 mg/kg bodyweight/day
<b>Phenol, isopropylated, phosphate (3:1) (68937-41-7)</b>	
DNEL/DMEL (Workers)	
Acute - systemic effects, dermal	2000 mg/kg bodyweight/day
Acute - systemic effects, inhalation	20,1 mg/m <sup>3</sup>
Acute - local effects, dermal	16 mg/cm <sup>2</sup>
Long-term - systemic effects, dermal	0,417 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0,145 mg/m <sup>3</sup>
Long-term - local effects, inhalation	700 mg/m <sup>3</sup>
DNEL/DMEL (General population)	
Acute - systemic effects, dermal	100 mg/kg bodyweight
Acute - systemic effects, inhalation	350 mg/m <sup>3</sup>
Acute - systemic effects, oral	50 mg/kg bodyweight
Acute - local effects, dermal	8 mg/cm <sup>2</sup>
Long-term - systemic effects, oral	0,04 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	0,07 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	0,208 mg/kg bodyweight/day
PNEC (Water)	
PNEC aqua (freshwater)	0,00031 mg/l
PNEC aqua (marine water)	0,000031 mg/l
PNEC (Sediment)	
PNEC sediment (freshwater)	0,185 mg/kg dwt
PNEC sediment (marine water)	0,0185 mg/kg dwt
PNEC (Soil)	
PNEC soil	2,5 mg/kg dwt
PNEC (STP)	
PNEC sewage treatment plant	100 mg/l

Note : The Derived No Effect Level (DNEL) is an estimated safe level of exposure that is derived from toxicity data in accord with specific guidance within the European REACH regulation. The DNEL may differ from an Occupational Exposure Limit (OEL) for the same chemical. OELs may be recommended by an individual company, a governmental regulatory body or an expert organization, such as the Scientific Committee for Occupational Exposure Limits (SCOEL) or the American Conference of Governmental Industrial Hygienists (ACGIH). OELs are considered to be safe exposure levels for a typical worker in an occupational setting for an 8-hour work shift, 40 hour work week, as a time weighted average (TWA) or a 15 minute short-term exposure limit (STEL). While also considered to be protective of health, OELs are derived by a process different from that of REACH.

### 8.2. Exposure controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station. Before entering storage tanks and commencing any operation in a confined area, carry out an adequate clean-up, and check the atmosphere for oxygen content, flammability, and the presence of sulphur compounds. See also Section 16, "Other information".

#### Personal protective equipment (for industrial or professional use):

Gloves. Protective clothing. Safety glasses. Safety shoes or boots. Dust/aerosol mask.

#### Hand protection:

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

When there is a risk of contact with the skin, use hydrocarbon-resistant, felt-lined gloves. Adequate materials: nitrile (NBR) or PVC with a protection index > 5 (permeation time > 240 mins). Use gloves respecting all the conditions and within the limits set by the manufacturer. Replace gloves immediately in case of cuts, holes or other signs of damages or degradation. If necessary, refer to the EN 374 standard.

### Eye protection:

When there is a risk of contact with the eyes, use safety goggles or other means of protection (face shield). If necessary, refer to national standards or to the EN 166 standard.

### Skin and body protection:

Long-sleeved overalls. If necessary, refer to the EN 340 and related standards, for definition of characteristics and performance according to the risk rating of the area. Antistatic non-skid safety shoes or boots, chemical resistant, if necessary heat resistant and insulated.

### Respiratory protection:

Independently from other possible actions (technical modifications, operating procedures, and other means to limit the exposure of workers), personal protection equipment can be used according to necessity. Open or well ventilated spaces: if the product is handled without adequate containment means for the vapours: full or half-face gas mask with filter for organic vapours (A) or organic vapours/H<sub>2</sub>S (A+B). (EN 136/140/145). Combination filter device (DIN EN 141). Closed or confined areas (e.g. tank interiors): the use of protection measures for airways (masks or self-contained breathing apparatus), must be assessed according to the specific activity, as well as level and duration of predicted exposure. (EN 136/140/145). Approved respiratory protection equipment shall be used in spaces where hydrogen sulphide may accumulate: full face mask with cartridge/filter type "B" (grey for inorganic vapours including H<sub>2</sub>S) or self-contained breathing apparatus (SCBA). (EN 136/140/145)

### Personal protective equipment symbol(s):



### Thermal hazard protection:

If contact with hot product is possible or anticipated, gloves should be heat-resistant and thermally insulated.

### Environmental exposure controls:

Do not discharge the product into the environment. Prevent discharge of undissolved substance to or recover from onsite wastewater. Storage areas/installations should be designed with adequate bunds so as to prevent ground and water pollution in case of leaks or spills. Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed.

### Consumer exposure controls:

Not applicable.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid, bright & clear.
Colour	: Yellow-brown.
Odour	: Slight odour of petroleum.
Odour threshold	: There are no data available on the preparation/mixture itself.
pH	: No data available
Relative evaporation rate (butylacetate=1)	: Negligible.
Melting point	: -30 °C (pour point) (ASTM D 97)
Freezing point	: ≤ 0 °C (CAS 64741-89-5)
Boiling point	: 301 - 464 °C (CAS 64741-89-5)
Flash point	: 165 °C (ASTM D 92)
Critical temperature	: Not applicable for mixtures
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not applicable
Vapour pressure	: < 0,1 hPa (20°C)
Critical pressure	: Not applicable for mixtures
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: 851 kg/m <sup>3</sup> (15 °C) (ASTM D 4052)
Solubility	: Water: Immiscible and insoluble
Log Pow	: Not applicable for mixtures
Log Kow	: Not applicable for mixtures

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

Viscosity, kinematic	: 10 mm <sup>2</sup> /s (40 °C) (ASTM D 445)
Viscosity, dynamic	: No data available
Explosive properties	: None (according to composition).
Oxidising properties	: None (according to composition).
Explosive limits	: LEL ≥ 45 g/m <sup>3</sup> (Aerosol)

### 9.2. Other information

Additional information	: No data available
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## SECTION 10: Stability and reactivity

### 10.1. Reactivity

This mixture does not offer any further hazard for reactivity, except what is reported in the following paragraphs.

### 10.2. Chemical stability

Stable product, according to its intrinsic properties (in normal conditions of storage and handling).

### 10.3. Possibility of hazardous reactions

None (in normal conditions of storage and handling). Contact with strong oxidizers (peroxides, chromates, etc.) may cause a fire hazard. Sensitivity to heat, friction or shock cannot be assessed in advance.

### 10.4. Conditions to avoid

Keep away from open flames, hot surfaces and sources of ignition. Avoid the build-up of electrostatic charge.

### 10.5. Incompatible materials

Strong oxidants.

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Thermal decomposition may produce : Toxic fumes. In exceptional cases (i.e prolonged storage in tanks contaminated with water, and presence of anaerobic sulfate-reducing microbial colonies), the product may undergo a degradation and generate small amounts of sulfur compounds, including H<sub>2</sub>S. See also Section 16, "Other information".

## SECTION 11: Toxicological information

### 11.1. Information on toxicological effects

Acute toxicity (oral)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (dermal)	: Not classified (Based on available data, the classification criteria are not met)
Acute toxicity (inhalation)	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)

#### Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)

LD50 oral rat	> 5000 mg/kg (OECD 401)
LD50 dermal rat	> 5000 mg/kg (OECD 402)
LC50 inhalation rat (mg/l)	> 5 mg/l/4h (OECD 403)

#### White mineral oil (petroleum) (8042-47-5)

LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 5000 mg/kg bodyweight
LC50 inhalation rat (mg/l)	> 5 mg/l/4h

#### Phenol, isopropylated, phosphate (3:1) (68937-41-7)

LD50 oral rat	≥ 5000 mg/kg
LD50 dermal rabbit	≥ 10000 mg/kg bodyweight
LC50 inhalation rat (mg/l)	≥ 200 mg/l/4h

Skin corrosion/irritation	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Serious eye damage/irritation	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Respiratory or skin sensitisation	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Germ cell mutagenicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
Carcinogenicity	: Not classified (Based on available data, the classification criteria are not met)

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

Additional information	: (according to composition) This product contains : Distillates (petroleum), solvent-refined light paraffinic; Baseoil—unspecified; [A complex combination of hydrocarbons obtained as the raffinate from a solvent extraction process. It consists predominantly of saturated hydrocarbons having carbon numbers predominantly in the range of C15 through C30 and produces a finished oil with a viscosity of less than 100 SUS at 100 °F (19cSt at 40 °C).] this product has a value of DMSO extract < 3 % wt, according to IP 346/92. According to the criteria laid out by the EU (note L, Annex VI of Regulation (CE) 1272/2008), this product must be regarded as non carcinogenic.
Reproductive toxicity	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition) This product contains : Phenol, isopropylated, phosphate (3:1) Suspected of damaging fertility. Suspected of damaging the unborn child. (if swallowed). The actual relevance of these effects in man is not certain.

### Phenol, isopropylated, phosphate (3:1) (68937-41-7)

NOAEL (animal/male, F0/P)	400 mg/kg bodyweight (OECD 414)
STOT-single exposure	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)
STOT-repeated exposure	: Not classified (Based on available data, the classification criteria are not met)
Additional information	: (according to composition)

### Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)

LOAEL (oral, rat, 90 days)	125 mg/kg bodyweight/day (OECD TG 408)
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### Phenol, isopropylated, phosphate (3:1) (68937-41-7)

NOAEL (oral, rat, 90 days)	< 25 mg/kg bodyweight/day (OECD 408)
Aspiration hazard	: May be fatal if swallowed and enters airways.
Additional information	: (according to composition) For all low-viscosity petroleum products (less than 20,5 mm <sup>2</sup> /s at 40 °C), there is the risk of aspiration into the lungs. This may occur directly after ingestion, or subsequently in case of vomiting (spontaneous or induced). In this case there is the possibility of an inflammation of the lung tissues (chemical pneumonia). This is a serious condition requiring medical treatment. Aspiration into lungs can cause a chemical pneumonia

### Eni Acer MV 10

Viscosity, kinematic	10 mm <sup>2</sup> /s (40 °C) (ASTM D 445)
Potential adverse human health effects and symptoms	: Aspiration into lungs can cause a chemical pneumonia. May be fatal if swallowed and enters airways. Contact with eyes may cause temporary reddening and irritation. Avoid all eye and skin contact and do not breathe vapour and mist.
Other information	: None.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general	: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. An uncontrolled release to the environment may produce a contamination of different environmental compartments (air, soil, underground, surface water bodies, aquifers). Handle according to general working hygiene practices to avoid pollution and release into the environment. Notify authorities if product enters sewers or public waters.
Ecology - air	: This product has a low vapour pressure. A significant exposure may happen only if the product is used at high temperature, or in case of sprays and mists.
Ecology - water	: This product is not soluble in water. It floats on water and forms a film on the surface. The damage to aquatic organisms is of mechanical kind (immobilization and entrapment)
Ecology - water	: Toxic to aquatic life.
Hazardous to the aquatic environment, short-term (acute)	: Not classified (Based on available data, the classification criteria are not met)
Hazardous to the aquatic environment, long-term (chronic)	: Toxic to aquatic life with long lasting effects.

### Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)

LC50 fish 1	> 100 mg/l (LL 50)
EC50 Daphnia 1	> 10000 mg/l WAF, 48 h (OECD 202)

### White mineral oil (petroleum) (8042-47-5)

LC50 fish 1	100 - 10000 mg/l
EC50 Daphnia 1	100 mg/l

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

<b>White mineral oil (petroleum) (8042-47-5)</b>	
EC50 72h algae (1)	100 mg/l
<b>Phenol, isopropylated, phosphate (3:1) (68937-41-7)</b>	
LC50 fish 1	1,6 mg/l (Oncorhynchus mykiss)
LC50 fish 2	10,8 mg/l (Pimephales promelas)
EC50 Daphnia 1	2,44 mg/l
NOEC chronic fish	0,0031 mg/l (33d, Pimephales promelas, OECD 210)
NOEC chronic crustacea	0,041 mg/l (21d, OECD 211)

### 12.2. Persistence and degradability

<b>Eni Acer MV 10</b>	
Persistence and degradability	The most significant constituents of the product should be considered as "inherently biodegradable", but not "readily biodegradable", and they may be moderately persistent, particularly in anaerobic conditions.
<b>Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)</b>	
Persistence and degradability	The most significant constituents of the product should be considered as "inherently biodegradable", but not "readily biodegradable", and they may be moderately persistent, particularly in anaerobic conditions.
Biodegradation	31 % (28d, Exxon 1995)
<b>White mineral oil (petroleum) (8042-47-5)</b>	
Persistence and degradability	The most significant constituents of the product should be considered as "inherently biodegradable", but not "readily biodegradable", and they may be moderately persistent, particularly in anaerobic conditions.
Biodegradation	< 60 %
<b>Phenol, isopropylated, phosphate (3:1) (68937-41-7)</b>	
Biodegradation	17,9 % (28d)

### 12.3. Bioaccumulative potential

<b>Eni Acer MV 10</b>	
Log Pow	Not applicable for mixtures
Log Kow	Not applicable for mixtures
Bioaccumulative potential	Not established.
<b>Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)</b>	
Bioaccumulative potential	The test methods for this endpoint are not applicable to UVCB substances.

### 12.4. Mobility in soil

<b>Eni Acer MV 10</b>	
Ecology - soil	No data available.
<b>Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)</b>	
Ecology - soil	This product is not soluble in water. It floats on water and forms a film on the surface.

### 12.5. Results of PBT and vPvB assessment

<b>Eni Acer MV 10</b>	
This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII	
This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII	
Results of PBT-vPvB assessment	The components in this formulation do not meet the criteria for classification as PBT or vPvB. The product should be considered prudentially as "Persistent" in the environment, according to the REACH Annex XIII criteria (point 1.1)
<b>Component</b>	
White mineral oil (petroleum) (8042-47-5)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII
Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)	This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII This substance does not meet the criteria for classification as PBT or vPvB. The product should be considered prudentially as "Persistent" in the environment, according to the REACH Annex XIII criteria (point 1.1)

### 12.6. Other adverse effects

Other adverse effects	: None.
Additional information	: This product has no specific properties for inhibition of bacterial activity. In any case, wastewater containing this product should be treated in plants that are suited for the specific purpose.

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015



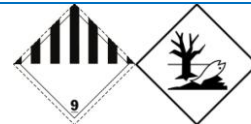
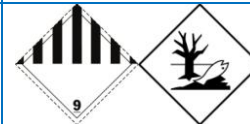
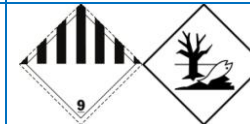
### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods

Waste treatment methods	: Do not dispose of the product, either new or used, by discharging into sewers, tunnels, lakes or water courses. Deliver to a qualified official collector.
Sewage disposal recommendations	: Do not apply industrial sludge to natural soils. Sludge should be incinerated, contained or reclaimed. Dispose of in a safe manner in accordance with local/national regulations.
Product/Packaging disposal recommendations	: European Waste Catalogue code(s) (Decision 2001/118/CE): 13 02 05* (mineral-based non-chlorinated engine, gear and lubricating oils). This EWC code is only a general indication, and takes into account the original composition of the product and its intended use. The user has the responsibility of choosing the right EWC code, considering the actual use of the product, alterations and contaminations.
Additional information	: Empty containers may contain combustible product residues. Do not cut, weld, drill, burn or incinerate empty containers or drums, unless they have been cleaned, and declared safe.
Ecology - waste materials	: The product as it is does not contain halogenated substances.
EURAL code (EWC)	: 13 02 05* - Mineral-based non-chlorinated engine, gear and lubricating oils

### SECTION 14: Transport information

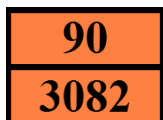
In accordance with ADN / ADR / IATA / IMDG / RID

ADR	IMDG	IATA	ADN	RID
<b>14.1. UN number</b>				
3082	3082	3082	3082	3082
<b>14.2. UN proper shipping name</b>				
ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	Environmentally hazardous substance, liquid, n.o.s.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
<b>Transport document description</b>				
UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Phenol, isopropylated, phosphate (3:1)), 9, III, (-)	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III, MARINE POLLUTANT	UN 3082 Environmentally hazardous substance, liquid, n.o.s., 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III	UN 3082 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., 9, III
<b>14.3. Transport hazard class(es)</b>				
9	9	9	9	9
				
<b>14.4. Packing group</b>				
III	III	III	III	III
<b>14.5. Environmental hazards</b>				
Dangerous for the environment : Yes	Dangerous for the environment : Yes Marine pollutant : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes	Dangerous for the environment : Yes
None.				

#### 14.6. Special precautions for user

##### - Overland transport

Transport regulations (ADR)	: Subject to the provisions
Classification code (UN)	: M6
Limited quantities (ADR)	: 5l
Excepted quantities (ADR)	: E1
Transport category (ADR)	: 3
Hazard identification number (Kemler No.)	: 90
Orange plates	:



Tunnel restriction code	: -
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# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

### - Transport by sea

Transport regulations (IMDG)	: Subject to the provisions
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
IBC packing instructions (IMDG)	: IBC03
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-F
Stowage category (IMDG)	: A

### - Air transport

Transport regulations (IATA)	: Subject to the provisions
PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y964
PCA limited quantity max net quantity (IATA)	: 30kgG
PCA max net quantity (IATA)	: 450L
CAO max net quantity (IATA)	: 450L

### - Inland waterway transport

Transport regulations (ADN)	: Subject to the provisions
Classification code (ADN)	: M6
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1

### - Rail transport

Transport regulations (RID)	: Subject to the provisions
Classification code (RID)	: M6
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Transport category (RID)	: 3
Hazard identification number (RID)	: 90

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

IBC code	: Not applicable.
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## SECTION 15: Regulatory information

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

#### 15.1.1. EU-Regulations

The following restrictions are applicable according to Annex XVII of the REACH Regulation (EC) No 1907/2006:

3(b) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard classes 3.1 to 3.6, 3.7 adverse effects on sexual function and fertility or on development, 3.8 effects other than narcotic effects, 3.9 and 3.10	Eni Acer MV 10 - White mineral oil (petroleum) - Phenol, isopropylated, phosphate (3:1) - Distillates (petroleum), solvent-refined light paraffinic
3(c) Substances or mixtures fulfilling the criteria for any of the following hazard classes or categories set out in Annex I to Regulation (EC) No 1272/2008: Hazard class 4.1	Eni Acer MV 10 - Phenol, isopropylated, phosphate (3:1)

No ingredients are included in the REACH Candidate list (> 0,1 % m/m).

Contains no REACH Annex XIV substances

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

Other information, restriction and prohibition regulations : Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH). (et sequens). Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 (et sequens). Directives 89/391/CEE, 89/654/CEE, 89/655/CEE, 89/656/CEE, 90/269/CEE, 90/270/CEE, 90/394/CEE, 90/679/CEE, 93/88/CEE, 95/63/CE, 97/42/CE, 98/24/CE, 99/38/CE, 99/92/CE, 2001/45/CE, 2003/10/CE, 2003/18/CE (Health and safety on the workplace). Directive 2012/18/CE (Control of major-accident hazards involving dangerous substances). Directive 2004/42/CE (Limitation of emissions of Volatile Organic Compounds). Directive 98/24/EC (protection of the health and safety of workers from the risks related to chemical agents at work). Directive 92/85/CE (measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding). Substances Depleting the Ozone layer (1005/2009) - Annex I Substances (ODP). Regulation (EC) No 850/2004 of the European Parliament and of the Council of 29 April 2004 on persistent organic pollutants and amending Directive 79/117/EEC. Regulation EU (649/2012) - Export and Import of hazardous chemicals (PIC).

### 15.1.2. National regulations

National adoption of EU Directives concerning health and safety on the workplace.

National adoption of EU Directives concerning control of major-accident hazards involving dangerous substances (2012/18/CE).

Relevant national laws on prevention of water pollution.

Relevant national laws on protection of the health of pregnant workers (National adoption of Dir. 92/85/EEC).

National adoption of Directives 75/439/CEE - 87/101/CEE concerning disposal of used oils.

#### France

Maladies professionnelles (F) : RG 36 - Affections provoquées par les huiles et graisses d'origine minérale ou de synthèse

#### Germany

Reference to AwSV : Water hazard class (WGK) (D) 3, Highly hazardous to water (Classification according to AwSV, Annex 1)

WGK remark : Classification is carried out on the basis of the Ordinance on facilities for handling substances that are hazardous to water (Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen (AwSV)) of 18 April 2017 (BGBl 2017, Teil I, Nr. 22, Seite 905).

VbF class (D) : Not applicable.

Storage class (LGK) (D) : LGK 10 - Combustible liquids

Employment restrictions : Employment prohibitions or restrictions on the protection of young people at work according to § 22 JArbSchG in the case of formation of hazardous substances have to be observed.

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV : Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Other information, restrictions and prohibition regulations : TRGS 400: Hazard assessment for activities involving Hazardous Substances  
TRGS 401: Risks resulting from skin contact - identification, assessment, measures  
TRGS 402: Identification and Assessment of the Risks from Activities involving Hazardous Substances: Inhalation Exposure  
TRGS 500: Protective measures  
TRGS 555: Working instruction and information for workers  
TRGS 800: Fire protection measures  
TRGS 900: Occupational Exposure Limits

#### Netherlands

Waterbezwaarlijkheid : 6 - Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment  
7 - Toxic to aquatic organisms

Saneringsinspanningen : C - Minimize discharge

SZW-lijst van kankerverwekkende stoffen : None of the components are listed

SZW-lijst van mutagene stoffen : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid : None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling : None of the components are listed

#### Denmark

Danish National Regulations : Pregnant/breastfeeding women working with the product must not be in direct contact with it

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

### 15.2. Chemical safety assessment

For this mixture a chemical safety assessment has been not carried out

**A chemical safety assessment has been carried out for the following components of this mixture:**

White mineral oil (petroleum)  
Phenol, isopropylated, phosphate (3:1)  
Distillates (petroleum), solvent-refined light paraffinic

### SECTION 16: Other information

Indication of changes:

Section	Changed item	Change	Notes
2.1	Classification according to Regulation (EC) No. 1272/2008 [EU-GHS / CLP]	Modified	
2.1	Adverse physicochemical, human health and environmental effects	Modified	
2.2	Hazard pictograms (CLP)	Modified	
2.2	Precautionary statements (CLP)	Modified	
2.2	Hazard statements (CLP)	Modified	
2.3	Other hazards not contributing to the classification	Modified	
3	Composition/information on ingredients	Modified	
3.2	Comments	Modified	
4.1	First-aid measures after skin contact	Modified	
4.1	First-aid measures after eye contact	Modified	
4.3	Other medical advice or treatment	Modified	
5.3	Firefighting instructions	Modified	
7.1	Hygiene measures	Modified	
7.1	Precautions for safe handling	Modified	
8.1	DNEL/DMEL and PNEC values	Modified	
8.2	Personal protective equipment (for industrial or professional use)	Modified	
8.2	Appropriate engineering controls	Modified	
9.1	Vapour pressure	Added	
9.1	Freezing point	Added	
9.1	Boiling point	Added	
9.1	Oxidising properties	Added	
9.1	Explosive properties	Added	
9.1	Critical temperature	Added	
9.1	Critical pressure	Added	
9.1	Log Kow	Added	
9.1	Flammability (solid, gas)	Added	
9.1	pH	Removed	
11.1	Additional information	Modified	
12.1	Ecology - water	Modified	
12.1	Ecology - general	Modified	
12.3	Log Kow	Added	
14.1	UN-No. (ADN)	Added	
14.1	UN-No.	Added	
14.1	UN-No. (RID)	Added	
14.1	UN-No. (IMDG)	Added	
14.1	UN-No. (ICAO)	Added	
14.2	Proper Shipping Name (IATA)	Added	
14.2	Proper Shipping Name (ADN)	Added	
14.2	Proper Shipping Name (RID)	Added	
14.2	Proper Shipping Name (IMDG)	Added	
14.2	Proper Shipping Name	Modified	
14.3	Danger labels (ICAO)	Added	
14.3	Danger labels (ADN)	Added	
14.3	Danger labels (RID)	Added	
14.3	Danger labels (IMDG)	Added	

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

14.3	Danger labels (UN)	Added	
14.3	Class (UN)	Modified	
14.4	Packing group (IATA)	Modified	
14.4	Packing group (RID)	Modified	
14.4	Packing group (ADN)	Modified	
14.4	Packing group (IMDG)	Modified	
14.4	Packing group (UN)	Modified	
14.6	PCA max net quantity (IATA)	Added	
14.6	PCA limited quantity max net quantity (IATA)	Added	
14.6	PCA Limited quantities (IATA)	Added	
14.6	PCA Excepted quantities (IATA)	Added	
14.6	CAO max net quantity (IATA)	Added	
14.6	Limited quantities (RID)	Added	
14.6	Transport regulations (ADR)	Modified	
14.6	Transport regulations (ADN)	Modified	
14.6	Transport regulations (RID)	Modified	
14.6	Transport regulations (IMDG)	Modified	
14.6	Transport regulations (IATA)	Modified	
14.6	Excepted quantities (ADN)	Added	
14.6	Limited quantities (ADN)	Added	
14.6	Classification code (ADN)	Added	
14.6	Hazard identification number (RID)	Added	
14.6	Transport category (RID)	Added	
14.6	Excepted quantities (RID)	Added	
14.6	Classification code (RID)	Added	
14.6	EmS-No. (Spillage)	Added	
14.6	EmS-No. (Fire)	Added	
14.6	Limited quantities (IMDG)	Added	
14.6	Stowage category (IMDG)	Added	
14.6	IBC packing instructions (IMDG)	Added	
14.6	Excepted quantities (IMDG)	Added	
14.6	Transport category (ADR)	Added	
14.6	Limited quantities (ADR)	Added	
14.6	Hazard identification number (Kemler No.)	Added	
14.6	Classification code (UN)	Added	
14.6	Excepted quantities (ADR)	Added	
14.6	Tunnel restriction code	Modified	
15.1	REACH Annex XVII	Modified	
15.1	WGK remark	Modified	
15.1	Water hazard class (WGK) (D)	Modified	
15.1	Other information, restrictions and prohibition regulations	Modified	
15.1	Waterbezwaarlijkheid	Modified	
16	Other information	Modified	
16	Indication of changes	Modified	

### Abbreviations and acronyms:

	Complete text of the H phrases quoted in this Safety Data Sheet. These phrases are reported here for information only, and MAY NOT correspond to the classification of the product.
	N/A = not applicable
	N/D = not available
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
CLP	Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC50	Effective concentration for 50 percent of test population (median effective concentration)
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods

# Eni Acer MV 10

## Safety Data Sheet

According to Regulation (EU) No. 830/2015

LC50	Lethal concentration for 50 percent of test population (median lethal concentration)
LD50	Lethal dose for 50 percent of test population (median lethal dose)
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals, Regulation (EC) No 1907/2006
RID	Regulation concerning the International Carriage of Dangerous Goods by Railways
SDS	Safety Data Sheet
STP	Sewage treatment plant
vPvB	Very Persistent and Very Bioaccumulative

Data sources	: This Safety Data Sheet is based on the real characteristics of the components and their combination, taking into account the information provided by the suppliers.
Training advice	: Provide adequate training to professional operators for the use of PPEs, according to the information contained in this Safety Data Sheet.
Other information	: Do not use the product for any purposes that have not been advised by the manufacturer. In exceptional cases (i.e prolonged storage in tanks contaminated with water, and presence of anaerobic sulfate-reducing microbial colonies), the product may undergo a degradation and generate small amounts of sulfur compounds, including H <sub>2</sub> S. This situation is especially relevant in all those circumstances which require to enter a confined space, with direct exposure to the vapours. If this possibility is suspected, a specific assessment of inhalation risks from the presence of H <sub>2</sub> S in confined spaces must be made, to help determine prevention measures and controls (i.e. PPE) appropriate to local circumstances, and adequate emergency procedures. If there is any suspicion of inhalation of H <sub>2</sub> S (hydrogen sulphide), Rescuers must wear breathing apparatus, belt and safety rope, and follow rescue procedures. Send patient to hospital. Immediately begin artificial respiration if breathing has ceased. Administer oxygen if necessary. This situation is especially relevant for those operations which involve direct exposure to the vapours in the interior of tanks or other confined spaces. Therefore, it is very important to follow the above mentioned precautionary measures also with used oils.

Full text of H- and EUH-statements:

Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Asp. Tox. 1	Aspiration hazard, Category 1
Repr. 2	Reproductive toxicity, Category 2
STOT RE 2	Specific target organ toxicity — Repeated exposure, Category 2
H304	May be fatal if swallowed and enters airways.
H361fd	Suspected of damaging fertility. Suspected of damaging the unborn child.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

Classification and procedure used to derive the classification for mixtures according to Regulation (EC) 1272/2008 [CLP]:

Asp. Tox. 1	H304	Calculation method
Aquatic Chronic 2	H411	Calculation method

SDS EU (REACH Annex II)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*

# Exposure Scenario:

## Distillates (petroleum), solvent-refined light paraffinic,CAS 64741-89-5

### Safety Data Sheet

According to Regulation (EU) No. 830/2015

#### 2. 02: Formulation & (re)packing of substances and mixtures

##### 2.1. Title section

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

ES Ref.: 02  
ES Type: Industrial  
Version: 2.0  
Revision date: 17/05/2018

Company ES code: ENI  
Association ref code: CONC.4.FU.2  
Date of issue: 23/10/2018

Environment		
Gen02	General measures applicable to all activities	ERC2, ESVOC SPERC 2.2.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2, PROC3
CS16	General exposures (open systems)	PROC4
CS136	Batch processes at elevated temperatures	PROC3
CS2	Process sampling	PROC3
CS36	Laboratory activities	PROC15
CS14	Bulk transfers	PROC8b
CS30	Mixing operations (open systems)	PROC5
CS34	Transfer from/pouring from containers	PROC8a
CS8	Drum/batch transfers	PROC8b
CS100	Production or preparation of articles by tableting, compression, extrusion or pelletisation	PROC14
CS6	Drum and small package filling	PROC9
CS39	Equipment cleaning and maintenance	PROC8a
CS67	Storage	PROC1, PROC2

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, tableting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities Industrial use
Assessment method	See Section 3.

##### 2.2. Conditions of use affecting exposure

###### 2.2.1. Control of environmental exposure: General measures applicable to all activities (ERC2, ESVOC SPERC 2.2.v1)

ERC2	Formulation of preparations
ESVOC SPERC 2.2.v1	Formulation & (re)packing of substances and mixtures: Industrial (SU10)
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

###### Product (article) characteristics

Physical form of product	liquid, with potential for aerosol generation
Concentration of substance in product	100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	74000
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	74000
Maximum daily site tonnage (kg/day):	25000
Continuous release.	
Emission Days (days/year):	300

###### Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
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:	>= 86.7 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	>= 1.5 %
Common practices vary across sites thus conservative process release estimates used.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

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

Other protection measures such as segregation of activity, minimisation of personnel, respiratory protection, impervious suits and face shields should also be considered for high dispersion activities which are likely to lead to substantial aerosol or vapour release, e.g. spraying.	
A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios.	
DNEL long-term inhalative (systemic)	5.4 mg/m <sup>3</sup>

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5 %
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	25000 kg/day
Assumed domestic sewage treatment plant flow:	2000 m <sup>3</sup> /d

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

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

## Other conditions affecting environmental exposure

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

### 2.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2, PROC3)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
PROC3	Use in closed batch process (synthesis or formulation) (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Ensure material transfers are under containment or extract ventilation	
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## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

### 2.2.3. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Transfer via enclosed lines	
Clear transfer lines prior to de-coupling	
Ensure material transfers are under containment or extract ventilation	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

### 2.2.4. Control of worker exposure: Batch processes at elevated temperatures (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

Local exhaust ventilation - efficiency of at least [%]:	90
Provide extract ventilation to points where emissions occur	

## Other conditions affecting workers exposure

Indoor	
Operation is carried out at elevated temperature (> 20°C above ambient temperature)	

## 2.2.5. Control of worker exposure: Process sampling (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Avoid dip sampling.	
Ensure samples are obtained under containment or extract ventilation	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.6. Control of worker exposure: Laboratory activities (PROC15)

PROC15	Use as laboratory reagent
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Handle in a fume cupboard or under extract ventilation	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.7. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Ensure material transfers are under containment or extract ventilation	
Operate activity away from sources of substance emission or release	
Wear chemically resistant gloves (tested to EN374).	
Avoid splashing	
Clear transfer lines prior to de-coupling	
Transfer via enclosed lines	

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)	
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## 2.2.8. Control of worker exposure: Mixing operations (open systems) (PROC5)

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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## Conditions and measures related to personal protection, hygiene and health evaluation

Provide extract ventilation to points where emissions occur	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

## Other conditions affecting workers exposure

Indoor	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Assumes activities are at ambient temperature (unless stated differently)	
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## 2.2.9. Control of worker exposure: Transfer from/pouring from containers (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 1 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Use drum pumps or carefully pour from container	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.10. Control of worker exposure: Drum/batch transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

Provide extract ventilation to points where emissions occur	
Use drum pumps or carefully pour from container	
Avoid spillage when withdrawing pump	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.11. Control of worker exposure: Production or preparation of articles by tableting, compression, extrusion or pelletisation (PROC14)

PROC14	Production of preparations or articles by tableting, compression, extrusion, pelletisation
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.12. Control of worker exposure: Drum and small package filling (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

Fill containers/cans at dedicated fill points supplied with local extract ventilation	
Clear spills immediately.	
Wear suitable gloves tested to EN374.	
Put lids on containers immediately after use.	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.13. Control of worker exposure: Equipment cleaning and maintenance (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

	facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear suitable gloves tested to EN374.	
Wear suitable coveralls to prevent exposure to the skin	
Local exhaust ventilation - efficiency of at least [%]:	80

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 2.2.14. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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## Conditions and measures related to personal protection, hygiene and health evaluation

Store substance within a closed system	
Transfer via enclosed lines	
Avoid dip sampling.	

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)	
Outdoor	
Covers outdoor use.	

## 2.3. Exposure estimation and reference to its source

### 2.3.1. Environmental release and exposure General measures applicable to all activities (ERC2, ESVOC SPERC 2.2.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	0.0025	
Release fraction to wastewater from process (initial release prior to RMM):	0.000005	
Release fraction to soil from process (initial release prior to RMM):	0.0001	
Maximum Risk Characterization Ratios for air emissions	0.37	
Maximum Risk Characterization Ratios for wastewater emissions	0.91	

### 2.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2, PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 2.3.3. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 2.3.4. Worker exposure Batch processes at elevated temperatures (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 2.3.5. Worker exposure Process sampling (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 2.3.6. Worker exposure Laboratory activities (PROC15)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

## 2.3.7. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 2.3.8. Worker exposure Mixing operations (open systems) (PROC5)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 2.3.9. Worker exposure Transfer from/pouring from containers (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 2.3.10. Worker exposure Drum/batch transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 2.3.11. Worker exposure Production or preparation or articles by tableting, compression, extrusion or pelletisation (PROC14)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 2.3.12. Worker exposure Drum and small package filling (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 2.3.13. Worker exposure Equipment cleaning and maintenance (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 2.3.14. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

## 2.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 2.4.1. Environment

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

Guidance - Health	<p>The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. 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. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.</p> <p>EXPOSURE SCENARIOS</p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p> <p>Workers:</p> <ul style="list-style-type: none"> <li>- Do not ingest</li> <li>- Implement basic standard of occupation hygiene</li> <li>- Avoid splashes and spills</li> <li>- Avoid contact with contaminated objects and tools</li> <li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li> <li>- Training for staff on good practices</li> <li>- Good standard of personal hygiene</li> </ul>
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**4. 04: Distribution of substance****4.1. Title section****Distribution of substance**

ES Ref.: 04  
 ES Type: Industrial  
 Version: 2.0  
 Revision date: 17/05/2018

Company ES code: ENI  
 Association ref code: CONC.2.FU.1A  
 Date of issue: 23/10/2018

Environment		
Gen04	General measures applicable to all activities	ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2, PROC3
CS16	General exposures (open systems)	PROC4
CS2	Process sampling	PROC3
CS36	Laboratory activities	PROC15
CS14	Bulk transfers	PROC8b
CS6	Drum and small package filling	PROC9
CS39	Equipment cleaning and maintenance	PROC8a
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	Bulk loading (including marine vessel/barge, rail/road car and IBC loading) of substance within closed or contained systems, including incidental exposures during its sampling, storage, unloading, maintenance and associated laboratory activities. Industrial use
Assessment method	See Section 3.

**4.2. Conditions of use affecting exposure****4.2.1. Control of environmental exposure: General measures applicable to all activities (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1)**

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 thermo-plastics
ERC6d	Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers
ERC7	Industrial use of substances in closed systems
ESVOC SPERC 1.1b.v1	Distribution: Industrial (SU3)
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**Product (article) characteristics**

Physical form of product	Liquid, with potential for aerosol generation
Concentration of substance in product	100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	11000
Fraction of Regional tonnage used locally:	0.002
Annual site tonnage (tonnes/year):	22
Maximum daily site tonnage (kg/day):	11000
Continuous release.	
Emission Days (days/year):	20

**Technical and organisational conditions and measures**

Risk from environmental exposure is driven by freshwater sediment.	
If discharging to domestic sewage treatment plant, no onsite wastewater treatment required.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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:	>= 15.7 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	>= 0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5 %
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5 %
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	6800 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

## 4.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2, PROC3)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
PROC3	Use in closed batch process (synthesis or formulation) (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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## Technical and organisational conditions and measures

Ensure samples are obtained under containment or extract ventilation		
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## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)	
Outdoor	

## 4.2.3. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Technical and organisational conditions and measures

Clear transfer lines prior to de-coupling		
Ensure samples are obtained under containment or extract ventilation		

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
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## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)	
Indoor/Outdoor use.	

## 4.2.4. Control of worker exposure: Process sampling (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Technical and organisational conditions and measures

Ensure samples are obtained under containment or extract ventilation

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

Avoid dip sampling. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)

Outdoor

## 4.2.5. Control of worker exposure: Laboratory activities (PROC15)

PROC15

Use as laboratory reagent

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration

> 4 h/day

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

Handle in a fume cupboard or under extract ventilation

Wear suitable gloves tested to EN374.

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)

Indoor

## 4.2.6. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration

> 4 h/day

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

Ensure material transfers are under containment or extract ventilation

Operate activity away from sources of substance emission or release

Wear suitable gloves tested to EN374.

Avoid splashing

Clear transfer lines prior to de-coupling

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)

Indoor/Outdoor use.

## 4.2.7. Control of worker exposure: Drum and small package filling (PROC9)

PROC9

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration

<= 8 h/day

## Technical and organisational conditions and measures

Clear spills immediately.

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

Fill containers/cans at dedicated fill points supplied with local extract ventilation

Wear suitable gloves tested to EN374.

Put lids on containers immediately after use.

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)

Indoor

## 4.2.8. Control of worker exposure: Equipment cleaning and maintenance (PROC8a)

PROC8a

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration

<= 1 h/day

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

Drain down and flush system prior to equipment break-in or maintenance

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	
Local exhaust ventilation - efficiency of at least [%]:	80

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 4.2.9. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 8 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Store substance within a closed system	
Avoid dip sampling.	
Transfer via enclosed lines	

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)	
Outdoor	

## 4.3. Exposure estimation and reference to its source

### 4.3.1. Environmental release and exposure General measures applicable to all activities (ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC6c, ERC6d, ERC7, ESVOC SPERC 1.1b.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	0.0001	
Release fraction to wastewater from process (initial release prior to RMM):	0.0000001	
Release fraction to soil from process (initial release prior to RMM):	0.00001	
Maximum Risk Characterization Ratios for air emissions	0.09	
Maximum Risk Characterization Ratios for wastewater emissions	0.14	

### 4.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2, PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 4.3.3. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 4.3.4. Worker exposure Process sampling (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 4.3.5. Worker exposure Laboratory activities (PROC15)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

## 4.3.6. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 4.3.7. Worker exposure Drum and small package filling (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 4.3.8. Worker exposure Equipment cleaning and maintenance (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 4.3.9. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

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

### 4.4.1. Environment

Guidance - 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 ( <a href="http://cefic.org/en/reach-for-industries-libraries.html">http://cefic.org/en/reach-for-industries-libraries.html</a> ).
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### 4.4.2. Health

Guidance - Health	<p>The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. 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. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.</p> <p><b>EXPOSURE SCENARIOS</b></p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p> <p>Workers:</p> <ul style="list-style-type: none"> <li>- Do not ingest</li> <li>- Implement basic standard of occupation hygiene</li> <li>- Avoid splashes and spills</li> <li>- Avoid contact with contaminated objects and tools</li> </ul>
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

	<ul style="list-style-type: none"><li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li><li>- Training for staff on good practices</li><li>- Good standard of personal hygiene</li></ul>
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**8. 08: Use in Metal working fluids / rolling oils****8.1. Title section****Use in Metal working fluids / rolling oils**

ES Ref.: 08

ES Type: Industrial

Version: 2.0

Revision date: 17/05/2018

Company ES code: ENI

Association ref code: CONC.13.FU.7

Date of issue: 23/10/2018

Environment		
Gen08	General measures applicable to all activities	ERC4, ESVOC SPERC 4.7a.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2
CS15	General exposures (closed systems) + with sample collection	PROC3
CS16	General exposures (open systems)	PROC4
CS14	Bulk transfers	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC5
CS45	Filling / preparation of equipment from drums or containers.	PROC9
CS2	Process sampling	PROC3
CS79	Mixing operations (open systems)	PROC17
CS35	Treatment by dipping and pouring	PROC13
CS10	Spraying	PROC7
CS34	Roller application or brushing	PROC10
CS80	Automated metal rolling/forming	PROC2
CS83	Semi-automated metal rolling/forming	PROC17
CS83	Semi-automated metal rolling/forming	PROC4
CS39	Equipment cleaning and maintenance	PROC8b
CS39	Equipment cleaning and maintenance	PROC8a
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	Covers the use in formulated MWFs/rolling oils within closed or contained systems including incidental exposures during transfer operations, rolling and annealing activities, cutting/machining activities, automated application of corrosion protections, equipment maintenance, draining and disposal of waste oils. Industrial use
Assessment method	See Section 3.

**8.2. Conditions of use affecting exposure****8.2.1. Control of environmental exposure: General measures applicable to all activities (ERC4, ESVOC SPERC 4.7a.v1)**

ERC4	Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
ESVOC SPERC 4.7a.v1	Use in Metal working fluids / rolling oils: Industrial (SU3)
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**Product (article) characteristics**

Physical form of product	liquid, with potential for aerosol generation
Concentration of substance in product	100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	2.5
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	2.5
Maximum daily site tonnage (kg/day):	130
Continuous release.	
Emission Days (days/year):	20

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no onsite 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:	>= 15.7 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	>= 0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5 %
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5 %
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	780 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

## 8.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	≈ 8 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.3. Control of worker exposure: General exposures (closed systems) + with sample collection (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	≈ 8 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide extract ventilation to points where emissions occur	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.4. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

With LEV	
Ensure material transfers are under containment or extract ventilation	
Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

### 8.2.5. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Operate activity away from sources of substance emission or release	
Ensure material transfers are under containment or extract ventilation	
Wear suitable gloves tested to EN374.	
Avoid splashing	
Clear transfer lines prior to de-coupling	
Transfer via enclosed lines	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

### 8.2.6. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Transfer via enclosed lines	
Use drum pumps or carefully pour from container	
Wear chemically resistant gloves (tested to EN374).	
Personal protective equipment (PPE)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

### 8.2.7. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC5)

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Transfer via enclosed lines	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Use drum pumps or carefully pour from container	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

## Other conditions affecting workers exposure

Indoor	
Operation is carried out at elevated temperature (> 20°C above ambient temperature)	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 8.2.8. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Ensure material transfers are under containment or extract ventilation	
Wear suitable gloves tested to EN374.	
Personal protective equipment (PPE)	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.9. Control of worker exposure: Process sampling (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Ensure samples are obtained under containment or extract ventilation	
Avoid dip sampling.	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.10. Control of worker exposure: Mixing operations (open systems) (PROC17)

PROC17	Lubrication at high energy conditions and in partly open process
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Wear suitable gloves tested to EN374.	
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	

### Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC13	Treatment of articles by dipping and pouring
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide extract ventilation to points where emissions occur	
Allow time for product to drain from workpiece	
Automate activity where possible	
Wear suitable gloves tested to EN374.	
Avoid manual contact with wet work pieces	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.12. Control of worker exposure: Spraying (PROC7)

PROC7	Industrial spraying
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Automate activity where possible	
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Wear chemically resistant gloves (tested to EN374). Wear suitable coveralls to prevent exposure to the skin. Wear suitable face shield. Wear a respirator conforming to EN140 with Type A/P2 filter or better	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	
Spraying (automatic/robotic)	

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

PROC10	Roller application or brushing
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	
Use long handled brushes and rollers where possible.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.14. Control of worker exposure: Automated metal rolling/forming (PROC2)

PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Provide extract ventilation to points where emissions occur	
Enclosed machinery, operator remote from spray head	
Wear suitable gloves tested to EN374.	
Personal protective equipment (PPE)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities reflect a hot process	≈ 120 °C

## 8.2.15. Control of worker exposure: Semi-automated metal rolling/forming (PROC17)

PROC17	Lubrication at high energy conditions and in partly open process
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### Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

With LEV	
Efficiency of at least:	90 %
Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	
Restrict area of openings to equipment	
Segregate the activity away from other operations	

## Other conditions affecting workers exposure

Indoor	
Assumes activities reflect a hot process	≈ 120 °C

## 8.2.16. Control of worker exposure: Semi-automated metal rolling/forming (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Provide extract ventilation to points where emissions occur	
Ensure material transfers are under containment or extract ventilation	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.17. Control of worker exposure: Equipment cleaning and maintenance (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
LEV efficiency from forced air assumed to equate to same as LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.18. Control of worker exposure: Equipment cleaning and maintenance (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
LEV efficiency from forced air assumed to equate to same as LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 8.2.19. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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## Conditions and measures related to personal protection, hygiene and health evaluation

Outdoor use.	
Store substance within a closed system	
Transfer via enclosed lines	
Avoid dip sampling.	

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	
Covers outdoor use.	

## 8.3. Exposure estimation and reference to its source

### 8.3.1. Environmental release and exposure General measures applicable to all activities (ERC4, ESVOC SPERC 4.7a.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	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	
Maximum Risk Characterization Ratios for air emissions	0.09	
Maximum Risk Characterization Ratios for wastewater emissions	0.14	

### 8.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

### 8.3.3. Worker exposure General exposures (closed systems) + with sample collection (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 8.3.4. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 8.3.5. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Sum RCR - Long-term - systemic effects		0.185	
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## 8.3.6. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 8.3.7. Worker exposure Filling / preparation of equipment from drums or containers. (PROC5)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 8.3.8. Worker exposure Filling / preparation of equipment from drums or containers. (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 8.3.9. Worker exposure Process sampling (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 8.3.10. Worker exposure Mixing operations (open systems) (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 8.3.11. Worker exposure Treatment by dipping and pouring (PROC13)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 8.3.12. Worker exposure Spraying (PROC7)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 8.3.13. Worker exposure Roller application or brushing (PROC10)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 8.3.14. Worker exposure Automated metal rolling/forming (PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 8.3.15. Worker exposure Semi-automated metal rolling/forming (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 8.3.16. Worker exposure Semi-automated metal rolling/forming (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 8.3.17. Worker exposure Equipment cleaning and maintenance (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.2 mg/m <sup>3</sup>	0.037	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.037	

## 8.3.18. Worker exposure Equipment cleaning and maintenance (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 8.3.19. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

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

### 8.4.1. Environment

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

Guidance - Health	<p>The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. 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. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.</p> <p><b>EXPOSURE SCENARIOS</b></p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p> <p>Workers:</p> <ul style="list-style-type: none"> <li>- Do not ingest</li> <li>- Implement basic standard of occupation hygiene</li> <li>- Avoid splashes and spills</li> <li>- Avoid contact with contaminated objects and tools</li> </ul>
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

	<ul style="list-style-type: none"><li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li><li>- Training for staff on good practices</li><li>- Good standard of personal hygiene</li></ul>
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**13.13: Lubricants****13.1. Title section****Lubricants**

ES Ref.: 13  
 ES Type: Industrial  
 Version: 2.0  
 Revision date: 17/05/2018

Company ES code: ENI  
 Association ref code: CONC.22.FU.23  
 Date of issue: 23/10/2018

Environment		
Gen13	Contributing scenario controlling environmental exposure	ERC4, ERC7, ESVOC SPERC 4.6a.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2
CS15	General exposures (closed systems)	PROC3
CS16	General exposures (open systems)	PROC4
CS14	Bulk transfers	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8a
CS45	Filling / preparation of equipment from drums or containers.	PROC8b
CS75	Initial factory fill of equipment	PROC9
CS17	Operation and lubrication of high energy open equipment	PROC17
CS17	Operation and lubrication of high energy open equipment	PROC18
CS35	Roller application or brushing	PROC10
CS35	Production of articles by dipping and pouring	PROC13
CS10	Spraying	PROC7
CS10	Spraying (automatic/robotic)	PROC7
CS77	Maintenance and machine set up	PROC8b
CS77	Maintenance and machine set up	PROC8b
CS18	Maintenance of small items	PROC8a
CS19	Remanufacture of reject articles	PROC9
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	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. Industrial use
Assessment method	See Section 3.

**13.2. Conditions of use affecting exposure****13.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC4, ERC7, ESVOC SPERC 4.6a.v1)**

ERC4	Industrial use of processing aids in processes and products, not becoming part of articles
ERC7	Use of functional fluid at industrial site
ESVOC SPERC 4.6a.v1	Lubricants: Industrial (SU3)
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**Product (article) characteristics**

Physical form of product	liquid
Concentration of substance in product	>= 100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	790
Fraction of Regional tonnage used locally:	0.13
Annual site tonnage (tonnes/year):	100
Maximum daily site tonnage (kg/day):	5000
Emission Days (days/year):	20
Continuous release.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
If discharging to domestic sewage treatment plant, no onsite 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:	32.7 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	25000 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

### 13.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide extract ventilation to points where emissions occur	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 13.2.3. Control of worker exposure: General exposures (closed systems) (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide extract ventilation to points where emissions occur	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 13.2.4. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

With LEV	
Ensure material transfers are under containment or extract ventilation	
Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 13.2.5. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Operate activity away from sources of substance emission or release	
Ensure material transfers are under containment or extract ventilation	
Wear suitable gloves tested to EN374.	
Avoid splashing	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 13.2.6. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Transfer via enclosed lines	
Use drum pumps or carefully pour from container	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Assumes activities are at ambient temperature (unless stated differently)	
Indoor/Outdoor use.	

### 13.2.7. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Transfer via enclosed lines	
Use drum pumps or carefully pour from container	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 13.2.8. Control of worker exposure: Initial factory fill of equipment (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

Without LEV	
Ensure material transfers are under containment or extract ventilation	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature or carried out at elevated temperature (> 20°C above ambient temperature)	

## 13.2.9. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC17)

PROC17	Lubrication at high energy conditions and in partly open process
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Provide extract ventilation to points where emissions occur	
Restrict area of openings to equipment	
Wear suitable gloves tested to EN374.	
Segregate the activity away from other operations	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.10. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC18)

PROC18	Greasing at high energy conditions
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Provide extract ventilation to points where emissions occur	
Restrict area of openings to equipment	
Wear suitable gloves tested to EN374.	
Segregate the activity away from other operations	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC10	Roller application or brushing
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Use long handled brushes and rollers where possible.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.12. Control of worker exposure: Production of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide extract ventilation to points where emissions occur	
Allow time for product to drain from workpiece	
Automate activity where possible	
Avoid manual contact with wet work pieces	
Wear chemically resistant gloves (tested to EN374).	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.13. Control of worker exposure: Spraying (PROC7)

PROC7	Industrial spraying
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	95 %
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Automate activity where possible	
Segregate the activity away from other operations	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.14. Control of worker exposure: Spraying (automatic/robotic) (PROC7)

PROC7	Industrial spraying
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	95 %
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Automate activity where possible	
Segregate the activity away from other operations	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.15. Control of worker exposure: Maintenance and machine set up (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Ensure material transfers are under containment or extract ventilation	
Clear transfer lines prior to de-coupling	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Assumes activities are at ambient temperature (unless stated differently)	
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## 13.2.16. Control of worker exposure: Maintenance and machine set up (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Ensure material transfers are under containment or extract ventilation	
Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely	
Clear transfer lines prior to de-coupling	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes use at not more than 20°C above ambient temperature, unless stated differently	

## 13.2.17. Control of worker exposure: Maintenance of small items (PROC8a)

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

### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Avoid manual contact with wet work pieces	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.18. Control of worker exposure: Remanufacture of reject articles (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.2.19. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure frequency	> 4 h/day
--------------------	-----------

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

Store substance within a closed system	
Transfer via enclosed lines	
Avoid dip sampling.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 13.3. Exposure estimation and reference to its source

### 13.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC4, ERC7, ESVO SPERC 4.6a.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	0.0001	
Release fraction to wastewater from process (initial release prior to RMM):	0.000001	
Release fraction to soil from process (initial release prior to RMM):	0.001	
Maximum Risk Characterization Ratios for air emissions	0.09	
Maximum Risk Characterization Ratios for wastewater emissions	0.18	

### 13.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

### 13.3.3. Worker exposure General exposures (closed systems) (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 13.3.4. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 13.3.5. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 13.3.6. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 13.3.7. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 13.3.8. Worker exposure Initial factory fill of equipment (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 13.3.9. Worker exposure Operation and lubrication of high energy open equipment (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 13.3.10. Worker exposure Operation and lubrication of high energy open equipment (PROC18)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 13.3.11. Worker exposure Roller application or brushing (PROC10)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 13.3.12. Worker exposure Production of articles by dipping and pouring (PROC13)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 13.3.13. Worker exposure Spraying (PROC7)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 13.3.14. Worker exposure Spraying (automatic/robotic) (PROC7)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 13.3.15. Worker exposure Maintenance and machine set up (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 13.3.16. Worker exposure Maintenance and machine set up (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 13.3.17. Worker exposure Maintenance of small items (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 13.3.18. Worker exposure Remanufacture of reject articles (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 13.3.19. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

## 13.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 13.4.1. Environment

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

Guidance - Health	<p><b>EXPOSURE SCENARIOS</b></p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p> <p>Workers:</p> <ul style="list-style-type: none"> <li>- Do not ingest</li> <li>- Implement basic standard of occupation hygiene</li> <li>- Avoid splashes and spills</li> <li>- Avoid contact with contaminated objects and tools</li> <li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li> <li>- Training for staff on good practices</li> <li>- Good standard of personal hygiene. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented</li> </ul>
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**17. 17: Use as Functional Fluids****17.1. Title section****Use as Functional Fluids**

ES Ref.: 17	Company ES code: ENI
ES Type: Industrial	Association ref code: CONC.22.FU.23
Version: 2.0	Date of issue: 23/10/2018
Revision date: 17/05/2018	

Environment		
Gen17	Contributing scenario controlling environmental exposure	ERC7, ESVOC SPERC 7.13a.v1
Worker		
CS14	Bulk transfers	PROC1, PROC2, PROC3
CS8	Drum/batch transfers	PROC8b
CS84	Filling of articles/equipment	PROC9
CS45	Filling / preparation of equipment from drums or containers.	PROC8a
CS15	General exposures (closed systems)	PROC2
CS16	General exposures (open systems)	PROC4
CS16	General exposures (open systems)	PROC4
CS19	Remanufacture of reject articles	PROC9
CS39	Equipment cleaning and maintenance	PROC8a
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in closed industrial equipment including incidental exposures during maintenance and related material transfers Industrial use
Assessment method	See Section 3.

**17.2. Conditions of use affecting exposure****17.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC7, ESVOC SPERC 7.13a.v1)**

ERC7	Use of functional fluid at industrial site
ESVOC SPERC 7.13a.v1	Use as Functional Fluids: Industrial (SU3)
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**Product (article) characteristics**

Physical form of product	liquid
Concentration of substance in product	>= 100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	630
Fraction of Regional tonnage used locally:	0.016
Annual site tonnage (tonnes/year):	10
Maximum daily site tonnage (kg/day):	500
Emission Days (days/year):	20
Continuous release.	

**Technical and organisational conditions and measures**

Risk from environmental exposure is driven by freshwater sediment.	
Prevent discharge of undissolved substance to or recover from onsite wastewater.	
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:	17.4 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	3100 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

## 17.2.2. Control of worker exposure: Bulk transfers (PROC1, PROC2, PROC3)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
PROC3	Use in closed batch process (synthesis or formulation) (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Transfer via enclosed lines	
Clear lines prior to de-coupling.	
Wear suitable gloves tested to EN374.	
Ensure material transfers are under containment or extract ventilation	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.3. Control of worker exposure: Drum/batch transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Operate activity away from sources of substance emission or release. Use drum pumps or carefully pour from container	
Avoid spillage when withdrawing pump	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.4. Control of worker exposure: Filling of articles/equipment (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Transfer via enclosed lines	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature or carried out at elevated temperature (> 20°C above ambient temperature)	

## 17.2.5. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Avoid spillage when withdrawing pump	
Use drum pumps or carefully pour from container	
Ensure operatives are trained to minimise exposures	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.6. Control of worker exposure: General exposures (closed systems) (PROC2)

PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Handle substance within a predominantly closed system provided with extract ventilation	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.7. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.8. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Restrict area of openings to equipment	
Provide extract ventilation to points where emissions occur	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Assumes activities reflect a hot process	
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## 17.2.9. Control of worker exposure: Remanufacture of reject articles (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.10. Control of worker exposure: Equipment cleaning and maintenance (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.2.11. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure frequency	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Store substance within a closed system	
Avoid dip sampling.	

### Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 17.3. Exposure estimation and reference to its source

### 17.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC7, ESVOG SPERC 7.13a.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	0.0001	
Release fraction to wastewater from process (initial release prior to RMM):	0.000001	
Release fraction to soil from process (initial release prior to RMM):	0.001	
Maximum Risk Characterization Ratios for air emissions	0.09	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Maximum Risk Characterization Ratios for wastewater emissions	0.14	
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## 17.3.2. Worker exposure Bulk transfers (PROC1, PROC2, PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 17.3.3. Worker exposure Drum/batch transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 17.3.4. Worker exposure Filling of articles/equipment (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 17.3.5. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 17.3.6. Worker exposure General exposures (closed systems) (PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

## 17.3.7. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 17.3.8. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2.5 mg/m <sup>3</sup>	0.463	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.463	

## 17.3.9. Worker exposure Remanufacture of reject articles (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 17.3.10. Worker exposure Equipment cleaning and maintenance (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 17.3.11. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.5 mg/m <sup>3</sup>	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

## 17.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 17.4.1. Environment

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

Guidance - Health	<p><b>EXPOSURE SCENARIOS</b></p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p> <p>Workers:</p> <ul style="list-style-type: none"> <li>- Do not ingest</li> <li>- Implement basic standard of occupation hygiene</li> <li>- Avoid splashes and spills</li> <li>- Avoid contact with contaminated objects and tools</li> <li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li> <li>- Training for staff on good practices</li> <li>- Good standard of personal hygiene. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented</li> </ul>
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## 21. 21: Use in Metal working fluids / rolling oils

### 21.1. Title section

#### Use in Metal working fluids / rolling oils

ES Ref.: 21  
ES Type: Professional  
Version: 2.0  
Revision date: 17/05/2018

Company ES code: ENI  
Association ref code: CONC.14.FU.7  
Date of issue: 23/10/2018

Environment		
Gen21	General measures applicable to all activities	ERC8a, ERC8d, ESVOC SPERC 8.7c.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2
CS15	General exposures (closed systems) + with sample collection	PROC3
CS14	Bulk transfers	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC9
CS45	Filling / preparation of equipment from drums or containers.	PROC8a
CS45	Filling / preparation of equipment from drums or containers.	PROC5
CS2	Process sampling	PROC8b
CS79	Metal machining operations	PROC17
CS34	Roller application or brushing	PROC10
CS34	Roller application or brushing	PROC10
CS10	Spraying	PROC11
CS10	Semi-automated metal rolling/forming	PROC11
CS35	Treatment by dipping and pouring	PROC13
CS39	Equipment cleaning and maintenance	PROC8a
CS39	Equipment cleaning and maintenance	PROC8b
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	Covers the use in formulated MWFs/rolling oils within closed or contained systems including incidental exposures during transfer operations, rolling and annealing activities, cutting/machining activities, automated application of corrosion protections, equipment maintenance, draining and disposal of waste oils. Professional use
Assessment method	See Section 3.

### 21.2. Conditions of use affecting exposure

#### 21.2.1. Control of environmental exposure: General measures applicable to all activities (ERC8a, ERC8d, ESVOC SPERC 8.7c.v1)

ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8d	Wide dispersive outdoor use of processing aids in open systems
ESVOC SPERC 8.7c.v1	Use in Metal working fluids / rolling oils: Professional (SU22) - high environmental release
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

#### Product (article) characteristics

Physical form of product	liquid, with potential for aerosol generation
Concentration of substance in product	100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	750
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	0.38
Maximum daily site tonnage (kg/day):	1
Continuous release.	
Emission Days (days/year):	365

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Technical and organisational conditions and measures

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:	Not applicable
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency:	>= 68.4 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	>= 0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5 %
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5 %
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	2.4 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

## 21.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	≈ 8 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.3. Control of worker exposure: General exposures (closed systems) + with sample collection (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	≈ 8 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Wear suitable gloves tested to EN374.	
Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.4. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Clear transfer lines prior to de-coupling	
Transfer via enclosed lines	
Wear suitable gloves tested to EN374.	
Avoid carrying out activities involving exposure for more than 4 hours	

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.5. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Use drum pumps or carefully pour from container	
Wear suitable gloves tested to EN374.	
Personal protective equipment (PPE)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.6. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Carefully pour from containers.	
Wear suitable gloves tested to EN374.	
Personal protective equipment (PPE)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.7. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Avoid carrying out activities involving exposure for more than 1 hour	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Use drum pumps or carefully pour from container	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Personal protective equipment (PPE)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 21.2.8. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC5)

PROC5	Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Exposure duration	< 1 h/day
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Without LEV	
Avoid carrying out activities involving exposure for more than 1 hour	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Use drum pumps or carefully pour from container	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
<b>Other conditions affecting workers exposure</b>	
Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.9. Control of worker exposure: Process sampling (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Exposure duration	<= 1 h/day
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Carefully pour from containers.	
Avoid dip sampling.	
Wear suitable gloves tested to EN374.	
<b>Other conditions affecting workers exposure</b>	
Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.10. Control of worker exposure: Metal machining operations (PROC17)

PROC17	Lubrication at high energy conditions and in partly open process
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Covers exposure up to (hours/event):	< 4 h/day
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
With LEV	
Efficiency of at least:	90 %
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Avoid carrying out activities involving exposure for more than 4 hours	
Limit the substance content in the product to 25 %	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Ensure operatives are trained to minimise exposures	
<b>Other conditions affecting workers exposure</b>	
Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC10	Roller application or brushing
<b>Amount used (or contained in articles), frequency and duration of use/exposure</b>	
Covers exposure up to (hours/event):	> 4 h/day
<b>Conditions and measures related to personal protection, hygiene and health evaluation</b>	
With LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC10	Roller application or brushing
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Provide extract ventilation to points where emissions occur	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	
Personal protective equipment (PPE)	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.13. Control of worker exposure: Spraying (PROC11)

PROC11	Non industrial spraying
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Avoid carrying out activities involving exposure for more than 1 hour	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Carry out in a vented booth or extracted enclosure	
Wear suitable gloves (tested to EN374), coverall and eye protection.	
Segregate the activity away from other operations	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.14. Control of worker exposure: Semi-automated metal rolling/forming (PROC11)

PROC11	Non industrial spraying
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation. Natural ventilation is from doors, windows etc. Controlled ventilation means air is supplied or removed by a powered fan.	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.	
Wear suitable coveralls to prevent exposure to the skin	
Avoid carrying out activities involving exposure for more than 4 hours	
Segregate the activity away from other operations	
Wear a respirator conforming to EN140 with Type A/P2 filter or better	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC13	Treatment of articles by dipping and pouring
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

With LEV	
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Allow time for product to drain from workpiece	
Wear suitable gloves tested to EN374.	
Avoid manual contact with wet work pieces	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.16. Control of worker exposure: Equipment cleaning and maintenance (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	<= 1 h/day
--------------------------------------	------------

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

Without LEV	
LEV efficiency from forced air assumed to equate to same as LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.17. Control of worker exposure: Equipment cleaning and maintenance (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Covers exposure up to (hours/event):	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
LEV efficiency from forced air assumed to equate to same as LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 21.2.18. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Covers daily exposures up to 8 hours (unless stated differently)	
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## Conditions and measures related to personal protection, hygiene and health evaluation

Outdoor use.	
Store substance within a closed system	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	
Covers outdoor use.	

## 21.3. Exposure estimation and reference to its source

### 21.3.1. Environmental release and exposure General measures applicable to all activities (ERC8a, ERC8d, ESVO SPERC 8.7c.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (after typical onsite RMMs consistent with EU Solvent Emissions Directive requirements):	0.005	
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	
Maximum Risk Characterization Ratios for air emissions	0.18	
Maximum Risk Characterization Ratios for wastewater emissions	0.43	

### 21.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 21.3.3. Worker exposure General exposures (closed systems) + with sample collection (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 21.3.4. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 21.3.5. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 21.3.6. Worker exposure Filling / preparation of equipment from drums or containers. (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

### 21.3.7. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 21.3.8. Worker exposure Filling / preparation of equipment from drums or containers. (PROC5)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 21.3.9. Worker exposure Process sampling (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 21.3.10. Worker exposure Metal machining operations (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	4.5 mg/m <sup>3</sup>	0.833	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.833	

## 21.3.11. Worker exposure Roller application or brushing (PROC10)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 21.3.12. Worker exposure Roller application or brushing (PROC10)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 21.3.13. Worker exposure Spraying (PROC11)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	4 mg/m <sup>3</sup>	0.741	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.741	

## 21.3.14. Worker exposure Semi-automated metal rolling/forming (PROC11)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 21.3.15. Worker exposure Treatment by dipping and pouring (PROC13)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 21.3.16. Worker exposure Equipment cleaning and maintenance (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 21.3.17. Worker exposure Equipment cleaning and maintenance (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 21.3.18. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 21.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 21.4.1. Environment

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

Guidance - Health	<p>The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. 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. Available hazard data do not enable the derivation of a DNEL for dermal irritant effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation.</p> <p>EXPOSURE SCENARIOS</p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p> <p>Workers:</p> <ul style="list-style-type: none"> <li>- Do not ingest</li> <li>- Implement basic standard of occupation hygiene</li> <li>- Avoid splashes and spills</li> <li>- Avoid contact with contaminated objects and tools</li> <li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li> <li>- Training for staff on good practices</li> <li>- Good standard of personal hygiene</li> </ul>
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## 27. 27: Lubricants

### 27.1. Title section

#### Lubricants

ES Ref.: 27	Company ES code: ENI
ES Type: Professional	Association ref code: CONC.22.FU.23
Version: 2.0	Date of issue: 23/10/2018
Revision date: 17/05/2018	

Environment		
Gen27	Contributing scenario controlling environmental exposure	ERC8a, ERC8d, ESVOC SPERC 8.6c.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2
CS15	General exposures (closed systems)	PROC3
CS26	Operation of equipment containing engine oils and similar	PROC20
CS16	General exposures (open systems)	PROC4
CS14	Bulk transfers	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8a
CS17	Operation and lubrication of high energy open equipment	PROC17
CS17	Operation and lubrication of high energy open equipment	PROC18
CS17	Operation and lubrication of high energy open equipment	PROC17
CS77	Maintenance and machine set up	PROC8b
CS77	Maintenance and machine set up	PROC8b
CS18	Maintenance of small items	PROC8a
CS19	Engine lubricant service	PROC9
CS35	Roller application or brushing	PROC10
CS10	Spraying	PROC11
CS10	Spraying	PROC11
CS35	Production of articles by dipping and pouring	PROC13
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	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. Professional use
Assessment method	See Section 3.

### 27.2. Conditions of use affecting exposure

#### 27.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC8a, ERC8d, ESVOC SPERC 8.6c.v1)

ERC8a	Wide dispersive indoor use of processing aids in open systems
ERC8d	Wide dispersive outdoor use of processing aids in open systems
ESVOC SPERC 8.6c.v1	Lubricants: Professional (SU22) - high environmental release
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

#### Product (article) characteristics

Physical form of product	liquid
Concentration of substance in product	>= 100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	7.5
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	0.0038
Maximum daily site tonnage (kg/day):	0.01
Emission Days (days/year):	365
Continuous release.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Technical and organisational conditions and measures

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:	Not applicable
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency:	17.4 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	0.063 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

### 27.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 27.2.3. Control of worker exposure: General exposures (closed systems) (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 27.2.4. Control of worker exposure: Operation of equipment containing engine oils and similar (PROC20)

PROC20	Heat and pressure transfer fluids in dispersive use but closed systems
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Handle substance within a predominantly closed system provided with extract ventilation	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature or carried out at elevated temperature (> 20°C above ambient temperature)	

## 27.2.5. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.6. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Handle substance within a predominantly closed system provided with extract ventilation	
Clear lines prior to de-coupling.	
Wear suitable gloves tested to EN374.	
Avoid carrying out activities involving exposure for more than 4 hours	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.7. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8b)

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
-------------------	-----------

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

Without LEV	
Use drum pumps or carefully pour from container	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.8. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

Without LEV	
Avoid carrying out activities involving exposure for more than 1 hour	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Use drum pumps or carefully pour from container	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.9. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC17)

PROC17	Lubrication at high energy conditions and in partly open process
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Restrict area of openings to equipment	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.10. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC18)

PROC18	Greasing at high energy conditions
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
-------------------	-----------

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

With LEV	
Efficiency of at least:	90 %
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Restrict area of openings to equipment	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.11. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC17)

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Ensure operation is undertaken outdoors	
Avoid carrying out activities involving exposure for more than 4 hours	
Limit the substance content in the product to 25 %	
Ensure operatives are trained to minimise exposures	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Limit the substance content in the product to 25 %	
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## 27.2.12. Control of worker exposure: Maintenance and machine set up (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Ensure material transfers are under containment or extract ventilation	
Clear transfer lines prior to de-coupling	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.13. Control of worker exposure: Maintenance and machine set up (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
-------------------	------------

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

With LEV	
Efficiency of at least:	80 %
Drain down system prior to equipment break-in or maintenance	
Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely	
Clear transfer lines prior to de-coupling	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes use at not more than 20°C above ambient temperature, unless stated differently	

## 27.2.14. Control of worker exposure: Maintenance of small items (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Drain down system prior to equipment break-in or maintenance	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.15. Control of worker exposure: Engine lubricant service (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC10	Roller application or brushing
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	≈ 8 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Provide extract ventilation to points where emissions occur	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.17. Control of worker exposure: Spraying (PROC11)

PROC11	Non industrial spraying
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	80 %
Carry out in a vented booth or extracted enclosure	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.18. Control of worker exposure: Spraying (PROC11)

PROC11	Non industrial spraying
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 1 h/day
-------------------	------------

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

Without LEV	
Wear a respirator conforming to EN140 with Type A filter or better.	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Limit the substance content in the product to 25 %	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.	
Segregate the activity away from other operations	
Wear suitable coveralls to prevent exposure to the skin	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	
Limit the substance content in the product to 25 %	

## 27.2.19. Control of worker exposure: Production of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Allow time for product to drain from workpiece	
Avoid manual contact with wet work pieces	
Wear chemically resistant gloves (tested to EN374).	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.2.20. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure frequency	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Store substance within a closed system	
Ensure dedicated sample points are provided	

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 27.3. Exposure estimation and reference to its source

### 27.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC8a, ERC8d, ESVOC SPERC 8.6c.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
Release fraction to air from process (initial release prior to RMM):	0.005	
Release fraction to wastewater from process (initial release prior to RMM):	0.05	
Release fraction to soil from wide dispersive use (regional only):	0.05	
Maximum Risk Characterization Ratios for air emissions	0.0039	
Maximum Risk Characterization Ratios for wastewater emissions	0.14	

### 27.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 27.3.3. Worker exposure General exposures (closed systems) (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 27.3.4. Worker exposure Operation of equipment containing engine oils and similar (PROC20)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 27.3.5. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.6. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.7. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.8. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 27.3.9. Worker exposure Operation and lubrication of high energy open equipment (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.10. Worker exposure Operation and lubrication of high energy open equipment (PROC18)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.11. Worker exposure Operation and lubrication of high energy open equipment (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2.6 mg/m <sup>3</sup>	0.481	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.481	

## 27.3.12. Worker exposure Maintenance and machine set up (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.13. Worker exposure Maintenance and machine set up (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 27.3.14. Worker exposure Maintenance of small items (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	4 mg/m <sup>3</sup>	0.741	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.741	

## 27.3.15. Worker exposure Engine lubricant service (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.16. Worker exposure Roller application or brushing (PROC10)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.17. Worker exposure Spraying (PROC11)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	4 mg/m <sup>3</sup>	0.741	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.741	

## 27.3.18. Worker exposure Spraying (PROC11)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 27.3.19. Worker exposure Production of articles by dipping and pouring (PROC13)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 27.3.20. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.01 mg/m <sup>3</sup>	0.002	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.002	

## 27.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 27.4.1. Environment

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

Guidance - Health	<p>EXPOSURE SCENARIOS</p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p>
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

	<p>Workers:</p> <ul style="list-style-type: none"><li>- Do not ingest</li><li>- Implement basic standard of occupation hygiene</li><li>- Avoid splashes and spills</li><li>- Avoid contact with contaminated objects and tools</li><li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li><li>- Training for staff on good practices</li><li>- Good standard of personal hygiene. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented</li></ul>
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**28.28: Lubricants****28.1. Title section****Lubricants**

ES Ref.: 28  
 ES Type: Professional  
 Version: 2.0  
 Revision date: 17/05/2018

Company ES code: ENI  
 Association ref code: CONC.22.FU.23  
 Date of issue: 23/10/2018

Environment		
Gen28	Contributing scenario controlling environmental exposure	ERC9a, ERC9b, ESVOC SPERC 9.6b.v1
Worker		
CS15	General exposures (closed systems)	PROC1, PROC2
CS15	General exposures (closed systems)	PROC3
CS26	Operation of equipment containing engine oils and similar	PROC20
CS16	General exposures (open systems)	PROC4
CS14	Bulk transfers	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8b
CS45	Filling / preparation of equipment from drums or containers.	PROC8a
CS17	Operation and lubrication of high energy open equipment	PROC17
CS17	Operation and lubrication of high energy open equipment	PROC18
CS17	Operation and lubrication of high energy open equipment	PROC17
CS77	Maintenance and machine set up	PROC8b
CS77	Maintenance and machine set up	PROC8b
CS18	Maintenance of small items	PROC8a
CS19	Engine lubricant service	PROC9
CS35	Roller application or brushing	PROC10
CS10	Spraying	PROC11
CS10	Spraying	PROC11
CS35	Production of articles by dipping and pouring	PROC13
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	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. Professional use
Assessment method	See Section 3.

**28.2. Conditions of use affecting exposure****28.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVOC SPERC 9.6b.v1)**

ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive outdoor use of substances in closed systems
ESVOC SPERC 9.6b.v1	Lubricants: Professional (SU22) - low environmental release
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**Product (article) characteristics**

Physical form of product	liquid
Concentration of substance in product	>= 100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	940
Fraction of Regional tonnage used locally:	0.0005
Annual site tonnage (tonnes/year):	0.47
Maximum daily site tonnage (kg/day):	1.3
Emission Days (days/year):	365
Continuous release.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Technical and organisational conditions and measures

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:	Not applicable
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency:	49.1 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	4.8 kg/day
Assumed domestic sewage treatment plant flow:	2000 m <sup>3</sup> /d

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

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

## Other conditions affecting environmental exposure

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

## 28.2.2. Control of worker exposure: General exposures (closed systems) (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.3. Control of worker exposure: General exposures (closed systems) (PROC3)

PROC3	Use in closed batch process (synthesis or formulation) (with sampling)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.4. Control of worker exposure: Operation of equipment containing engine oils and similar (PROC20)

PROC20	Heat and pressure transfer fluids in dispersive use but closed systems
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Handle substance within a predominantly closed system provided with extract ventilation	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature or carried out at elevated temperature (> 20°C above ambient temperature)	

## 28.2.5. Control of worker exposure: General exposures (open systems) (PROC4)

PROC4	Use in batch and other process (synthesis) where opportunity for exposure arises
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
-------------------	-----------

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

With LEV	
Provide extract ventilation to points where emissions occur	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.6. Control of worker exposure: Bulk transfers (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Handle substance within a predominantly closed system provided with extract ventilation	
Clear lines prior to de-coupling.	
Wear suitable gloves tested to EN374.	
Avoid carrying out activities involving exposure for more than 4 hours	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.7. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8b)

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
-------------------	-----------

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

Without LEV	
Use drum pumps or carefully pour from container	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.8. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

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

Without LEV	
Avoid carrying out activities involving exposure for more than 1 hour	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Use drum pumps or carefully pour from container	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.9. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC17)

PROC17	Lubrication at high energy conditions and in partly open process
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Restrict area of openings to equipment	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.10. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC18)

PROC18	Greasing at high energy conditions
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	90 %
Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Restrict area of openings to equipment	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.11. Control of worker exposure: Operation and lubrication of high energy open equipment (PROC17)

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	< 1 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Ensure operation is undertaken outdoors	
Avoid carrying out activities involving exposure for more than 4 hours	
Limit the substance content in the product to 25 %	
Ensure operatives are trained to minimise exposures	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Limit the substance content in the product to 25 %	
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## 28.2.12. Control of worker exposure: Maintenance and machine set up (PROC8b)

PROC8b	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Ensure material transfers are under containment or extract ventilation	
Clear transfer lines prior to de-coupling	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.13. Control of worker exposure: Maintenance and machine set up (PROC8b)

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

### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	80 %
Drain down system prior to equipment break-in or maintenance	
Provide extract ventilation to emission points when contact with warm (>50°C) lubricant is likely	
Clear transfer lines prior to de-coupling	
Wear suitable gloves tested to EN374.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes use at not more than 20°C above ambient temperature, unless stated differently	

## 28.2.14. Control of worker exposure: Maintenance of small items (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Drain down system prior to equipment break-in or maintenance	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.15. Control of worker exposure: Engine lubricant service (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

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

PROC10	Roller application or brushing
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	≈ 8 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Provide extract ventilation to points where emissions occur	
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.17. Control of worker exposure: Spraying (PROC11)

PROC11	Non industrial spraying
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
Efficiency of at least:	80 %
Carry out in a vented booth or extracted enclosure	
Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)	
Wear suitable gloves tested to EN374.	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.18. Control of worker exposure: Spraying (PROC11)

PROC11	Non industrial spraying
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 1 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Wear a respirator conforming to EN140 with Type A filter or better.	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	
Limit the substance content in the product to 25 %	
Wear chemically resistant gloves (tested to EN374) in combination with intensive management supervision controls.	
Segregate the activity away from other operations	
Wear suitable coveralls to prevent exposure to the skin	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	
Limit the substance content in the product to 25 %	

## 28.2.19. Control of worker exposure: Production of articles by dipping and pouring (PROC13)

PROC13	Treatment of articles by dipping and pouring
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### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

With LEV	
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Minimise exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings	
Allow time for product to drain from workpiece	
Avoid manual contact with wet work pieces	
Wear chemically resistant gloves (tested to EN374).	

## Other conditions affecting workers exposure

Indoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.2.20. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure frequency	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Store substance within a closed system	
Ensure dedicated sample points are provided	

## Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 28.3. Exposure estimation and reference to its source

### 28.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVOC SPERC 9.6b.v1)

#### Information for contributing exposure scenario

The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated, The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

Release route	Release rate	Release estimation method
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 wide dispersive use (regional only):	0.01	
Maximum Risk Characterization Ratios for air emissions	0.044	
Maximum Risk Characterization Ratios for wastewater emissions	0.24	

### 28.3.2. Worker exposure General exposures (closed systems) (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 28.3.3. Worker exposure General exposures (closed systems) (PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

### 28.3.4. Worker exposure Operation of equipment containing engine oils and similar (PROC20)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 28.3.5. Worker exposure General exposures (open systems) (PROC4)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.6. Worker exposure Bulk transfers (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.7. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.8. Worker exposure Filling / preparation of equipment from drums or containers. (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 28.3.9. Worker exposure Operation and lubrication of high energy open equipment (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.10. Worker exposure Operation and lubrication of high energy open equipment (PROC18)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.11. Worker exposure Operation and lubrication of high energy open equipment (PROC17)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2.6 mg/m <sup>3</sup>	0.481	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.481	

## 28.3.12. Worker exposure Maintenance and machine set up (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.13. Worker exposure Maintenance and machine set up (PROC8b)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 28.3.14. Worker exposure Maintenance of small items (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	4 mg/m <sup>3</sup>	0.741	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.741	

## 28.3.15. Worker exposure Engine lubricant service (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.16. Worker exposure Roller application or brushing (PROC10)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.17. Worker exposure Spraying (PROC11)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	4 mg/m <sup>3</sup>	0.741	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.741	

## 28.3.18. Worker exposure Spraying (PROC11)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 28.3.19. Worker exposure Production of articles by dipping and pouring (PROC13)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 28.3.20. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	0.01 mg/m <sup>3</sup>	0.002	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.002	

## 28.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 28.4.1. Environment

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

Guidance - Health	<p>EXPOSURE SCENARIOS</p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p>
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

	<p>Workers:</p> <ul style="list-style-type: none"><li>- Do not ingest</li><li>- Implement basic standard of occupation hygiene</li><li>- Avoid splashes and spills</li><li>- Avoid contact with contaminated objects and tools</li><li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li><li>- Training for staff on good practices</li><li>- Good standard of personal hygiene. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented</li></ul>
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**32.32: Use as Functional Fluids****32.1. Title section****Use as Functional Fluids**

ES Ref.: 32  
 ES Type: Professional  
 Version: 2.0  
 Revision date: 17/05/2018

Company ES code: ENI  
 Association ref code: CONC.22.FU.23  
 Date of issue: 23/10/2018

Environment		
Gen32	Contributing scenario controlling environmental exposure	ERC9a, ERC9b, ESVOC SPERC 9.13b.v1
Worker		
CS8	Drum/batch transfers	PROC8a
CS22	Filling / preparation of equipment from drums or containers.	PROC9
CS45	Filling / preparation of equipment from drums or containers.	PROC9
CS26	Operation of equipment containing engine oils and similar	PROC1, PROC2, PROC3
CS26	Operation of equipment containing engine oils and similar	PROC20
CS26	Operation of equipment containing engine oils and similar	PROC20
CS19	Remanufacture of reject articles	PROC9
CS39	Equipment cleaning and maintenance	PROC8a
CS67	Storage	PROC1, PROC2

Processes, tasks, activities covered	Use as functional fluids e.g. cable oils, transfer oils, insulators, refrigerants, hydraulic fluids in closed professional equipment including incidental exposures during maintenance and related material transfers. Professional use
Assessment method	See Section 3.

**32.2. Conditions of use affecting exposure****32.2.1. Control of environmental exposure: Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVOC SPERC 9.13b.v1)**

ERC9a	Wide dispersive indoor use of substances in closed systems
ERC9b	Wide dispersive outdoor use of substances in closed systems
ESVOC SPERC 9.13b.v1	Use as Functional Fluids: Professional (SU22)
Assessment method	The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated A quantitative exposure assessment (RCR) was performed for the potential formation of aerosols for all scenarios. The Hydrocarbon Block Method has been used to calculate environmental exposure with the Petrorisk model.

**Product (article) characteristics**

Physical form of product	liquid
Concentration of substance in product	>= 100 %
Vapour pressure	< 0.1 hPa

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

Fraction of EU tonnage used in region:	0.1
Regional use tonnage (tonnes/year):	7.5
Fraction of Regional tonnage used locally:	0.00005
Annual site tonnage (tonnes/year):	0.0038
Maximum daily site tonnage (kg/day):	0.01
Emission Days (days/year):	365
Continuous release.	

**Technical and organisational conditions and measures**

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:	Not applicable
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency:	16.3 %
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of:	0 %
Common practices vary across sites thus conservative process release estimates used.	
Do not apply industrial sludge to natural soils.	
Sludge should be incinerated, contained or reclaimed.	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## Conditions and measures related to sewage treatment plant

Not applicable as there is no release to wastewater.	
Estimated substance removal from wastewater via domestic sewage treatment:	86.5
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs:	86.5
Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal:	0.064 kg/day
Assumed domestic sewage treatment plant flow:	2000 m³/d

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

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

## Other conditions affecting environmental exposure

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

### 32.2.2. Control of worker exposure: Drum/batch transfers (PROC8a)

PROC8a	Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non dedicated facilities
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Use drum pumps	
Avoid spillage when withdrawing pump	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 32.2.3. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
-------------------	------------

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

Without LEV	
Wear suitable gloves tested to EN374.	
Avoid spillage when withdrawing pump	
Use drum pumps or carefully pour from container	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

### 32.2.4. Control of worker exposure: Filling / preparation of equipment from drums or containers. (PROC9)

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

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
-------------------	------------

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

Without LEV	
Use drum pumps or carefully pour from container	
Avoid spillage when withdrawing pump	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

Wear suitable gloves tested to EN374.	
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## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature or carried out at elevated temperature (> 20°C above ambient temperature)	

## 32.2.5. Control of worker exposure: Operation of equipment containing engine oils and similar (PROC1, PROC2, PROC3)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)
PROC3	Use in closed batch process (synthesis or formulation) (with sampling)

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
No other specific measures identified	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 32.2.6. Control of worker exposure: Operation of equipment containing engine oils and similar (PROC20)

PROC20	Heat and pressure transfer fluids in dispersive use but closed systems
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
No other specific measures identified	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 32.2.7. Control of worker exposure: Operation of equipment containing engine oils and similar (PROC20)

PROC20	Heat and pressure transfer fluids in dispersive use but closed systems
--------	--

## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	> 4 h/day
-------------------	-----------

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

Without LEV	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities reflect a hot process	

## 32.2.8. Control of worker exposure: Remanufacture of reject articles (PROC9)

PROC9	Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
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## Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
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## Conditions and measures related to personal protection, hygiene and health evaluation

Without LEV	
Drain down system prior to equipment break-in or maintenance	
Wear suitable gloves tested to EN374.	
Provide a good standard of controlled ventilation (10 to 15 air changes per hour)	

## Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 32.2.9. Control of worker exposure: Equipment cleaning and maintenance (PROC8a)

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

### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure duration	<= 4 h/day
-------------------	------------

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

Without LEV	
Drain down system prior to equipment break-in or maintenance	
Retain drain downs in sealed storage pending disposal or for subsequent recycle	
Deal with spills immediately	
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.	
Wear suitable coveralls to prevent exposure to the skin	

### Other conditions affecting workers exposure

Indoor/Outdoor use.	
Assumes activities are at ambient temperature (unless stated differently)	

## 32.2.10. Control of worker exposure: Storage (PROC1, PROC2)

PROC1	Use in closed process, no likelihood of exposure (no sampling)
PROC2	Use in closed, continuous process with occasional controlled exposure (with sampling)

### Amount used (or contained in articles), frequency and duration of use/exposure

Exposure frequency	> 4 h/day
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### Conditions and measures related to personal protection, hygiene and health evaluation

Store substance within a closed system	
Ensure dedicated sample points are provided	
Avoid dip sampling.	

### Other conditions affecting workers exposure

Outdoor	
Assumes activities are at ambient temperature (unless stated differently)	

## 32.3. Exposure estimation and reference to its source

### 32.3.1. Environmental release and exposure Contributing scenario controlling environmental exposure (ERC9a, ERC9b, ESVO C SPERC 9.13b.v1)

#### Information for contributing exposure scenario

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

Release route	Release rate	Release estimation method
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 wide dispersive use (regional only):	0.025	
Maximum Risk Characterization Ratios for air emissions	0.0038	
Maximum Risk Characterization Ratios for wastewater emissions	0.14	

### 32.3.2. Worker exposure Drum/batch transfers (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

### 32.3.3. Worker exposure Filling / preparation of equipment from drums or containers. (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

# Safety Data Sheet

According to Regulation (EU) No. 830/2015

## 32.3.4. Worker exposure Filling / preparation of equipment from drums or containers. (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 32.3.5. Worker exposure Operation of equipment containing engine oils and similar (PROC1, PROC2, PROC3)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 32.3.6. Worker exposure Operation of equipment containing engine oils and similar (PROC20)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 32.3.7. Worker exposure Operation of equipment containing engine oils and similar (PROC20)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 32.3.8. Worker exposure Remanufacture of reject articles (PROC9)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	5 mg/m <sup>3</sup>	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

## 32.3.9. Worker exposure Equipment cleaning and maintenance (PROC8a)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	2 mg/m <sup>3</sup>	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

## 32.3.10. Worker exposure Storage (PROC1, PROC2)

Route of exposure and type of effects	Exposure estimate	RCR	Method
Inhalation - Long-term - systemic effects	1 mg/m <sup>3</sup>	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

## 32.4. Guidance to Downstream User (DU) to evaluate whether he works inside the boundaries set by the ES

### 32.4.1. Environment

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

Guidance - Health	<p>EXPOSURE SCENARIOS</p> <p>All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one.</p> <p>Considering the specific hazard properties (H304), the implementation of the relevant risk reduction measures ensures that the possibility of the event connected to the hazard of aspiration is negligible, and risk can be assumed as controlled.</p>
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# Safety Data Sheet

According to Regulation (EU) No. 830/2015

	<p>Workers:</p> <ul style="list-style-type: none"><li>- Do not ingest</li><li>- Implement basic standard of occupation hygiene</li><li>- Avoid splashes and spills</li><li>- Avoid contact with contaminated objects and tools</li><li>- Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed.</li><li>- Training for staff on good practices</li><li>- Good standard of personal hygiene. Available hazard data do not enable the derivation of a DNEL for carcinogenic effects. Available hazard data do not support the need for a DNEL to be established for other health effects. Risk Management Measures are based on qualitative risk characterisation. The risk phrase H304 (May be fatal if swallowed and enters airways) refers to the possibility of inhalation, a risk not quantifiable determined by the physico-chemical properties (i.e. viscosity) that may 'occur during ingestion and Even in the case of vomiting after ingestion. A DNEL can not be derived. Risks from physicochemical hazards of substances can be controlled by implementing risk management measures. For substances classified as H304, the following measures must be taken to control the risk of inhalation. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels. Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented</li></ul>
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# Exposure Scenario:

Phenol, isopropylated, phosphate (3:1), CAS 68937-41-7

## Identified uses:

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### Use: ES2, Formulation of preparations, Adhesives, sealants

SU 10 SU19 SU24 PC1 PC9a PC16 PC21 PC30 PROC1 PROC2 PROC3 PROC4 PROC5  
PROC8a PROC8b PROC9 PROC15 PROC19 ERC2

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### Use: ES3, ATIEL ATC A [i], Formulation of preparations, Lubricants, greases, re-lease products, Lubricant, Additive, Metal working fluids

SU 10 SU17 PC17 PC24 PC25 PROC1 PROC2 PROC3 PROC4 PROC5 PROC8a PROC8b  
PROC9 PROC15 ERC4

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### Use: ES4, Adhesives, sealants, Industrial use

SU10 SU19 SU24 PROC5 PROC7 PROC8a PROC9 PROC10 PROC13 PROC19 ERC5

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### Use: ES5, Adhesives, sealants, Professional use

SU11 SU12 SU18 SU19 PC1 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC10  
PROC11 PROC13 PROC19 AC4 AC5 AC10 AC13 ERC8a

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### Use: ES6, Adhesives, sealants, Consumer use

PC1 PC1\_1 PC1\_2 PC1\_3 PC1\_4 AC4 AC5 AC10 AC13 ERC8a

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**Use: ES7, Formulation of preparations, Coatings and paints, thinners, paint removers, Industrial use**

2/202

SU6a SU 10 SU19 SU24 PC9a PROC5 PROC7 PROC8a PROC9 PROC10 PROC13 PROC19  
AC1 AC4 AC7 AC8 AC11 AC13 ERC5

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**Use: ES8, Coatings and paints, thinners, paint removers, Professional use**

SU11 SU12 SU18 SU19 PC9a PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC10  
PROC11 PROC13 PROC19 AC1 AC4 AC7 AC8 AC11 AC13 ERC8a

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**Use: ES9, Coatings and paints, thinners, paint removers, Consumer use**

PC9a PC9a\_1, PC15\_1 PC9a\_2, PC15\_2 PC9a\_3, PC15\_3 PC9a\_4, PC15\_4 AC1 AC7 AC8  
AC11 AC13 AC4 ERC8a

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**Use: ES10, Formulation of preparations, Heat transfer fluids, Industrial use**

SU8 SU24 PC16 PROC1 PROC2 PROC3 PROC4 PROC8a PROC20 ERC4

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**Use: ES11, Laboratory chemicals, Industrial use**

SU24 PC21 PROC3 PROC4 PROC8a PROC9 PROC15 ERC5

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**Use: ES12, Formulation of preparations, Photo-chemicals, Industrial use**

SU7 SU 10 SU24 PC30 PROC3 PROC4 PROC5 PROC7 PROC8a PROC8b PROC9 PROC10  
ERC5

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**Use: ES13, Photo-chemicals, Professional use**

SU7 SU 10 SU24 PC30 PROC3 PROC4 PROC5 PROC8a PROC8b PROC9 PROC10 PROC11  
AC7 AC8 AC13 ERC8c

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**Use: ES14, Photo-chemicals, Consumer use**

PC30 AC7 AC8 AC13 ERC8a

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**Use: ES15, Polymer preparations and compounds, Extrusion and masterbatching, Industrial use**

SU12 PC32 PROC2 PROC5 PROC8a PROC8b PROC9 PROC14 PROC21 PROC24 ERC6d

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**Use: ES16, Polymer preparations and compounds, Industrial use**

SU12 PC32 PROC1 PROC3 PROC4 PROC5 PROC6 PROC7 PROC8b PROC9 PROC10  
PROC13 PROC14 PROC21 PROC24 ERC5

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**Use: ES17, Polymer preparations and compounds, Fire retardant, Professional use**

SU12 PC32 PROC1 ERC9a ERC9b

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**Use: ES18, Polymer preparations and compounds, Fire retardant**

PC32 AC1 AC2 AC4 AC5 AC6 AC7 AC8 AC10 AC11 AC13 ERC9a ERC9b

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**Use: ES19, Polymer preparations and compounds, Fire retardant, Service life - consumers**

PC32 ERC10a ERC11a

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**Use: ES20, Polymer preparations and compounds, Production of foam-based objects, Extrusion and masterbatching**

SU12 PC32 PROC2 PROC3 PROC4 PROC5 PROC8b PROC9 PROC14 PROC15 PROC21 PROC24 ERC6d

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**Use: ES21, Polymer preparations and compounds, Production of foam-based objects, Industrial use**

SU12 PC32 PROC1 PROC3 PROC4 PROC5 PROC6 PROC7 PROC8b PROC9 PROC10 PROC13 PROC14 PROC21 PROC24 ERC5

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**Use: ES22, Production of foam-based objects, Professional use**

SU12 PC32 PROC1 ERC9a ERC9b

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**Use: ES23, Fire retardant, Production of foam-based objects, Consumer use**

PC12 PC32 AC1 AC2 AC4 AC5 AC6 AC7 AC8 AC10 AC11 AC13 ERC9a ERC9b

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**Use: ES24, Fire retardant, Production of foam-based objects, Service life - consumers**

PC32 AC1 AC2 AC4 AC5 AC6 AC7 AC8 AC10 AC11 AC13 ERC10a ERC11a

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**Use: ES25, ATIEL ATC B [i], Industrial use, Lubricants, greases, release products, vehicles and machinery, Filling of articles/equipment**

SU17 PC24 PROC1 PROC2 PROC8b PROC9 ERC4

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**Use: ES26, ATIEL ATC B [p], Professional use, Lubricants, greases, release products, Lubricant, Additive, Metal working fluids**

SU17 PC17 PROC1 PROC8a PROC8b PROC20 ERC9a

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**Use: ES27, Hydraulic fluids, Consumer use, Outdoor use**

PC17 PC24 AC2 ERC9b

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**Use: ES28, Hydraulic fluids, Consumer use, Indoor use**

PC17 PC24 AC2 ERC9a

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**Use: ES29, ATIEL ATC C [i], Industrial use, Lubricants, greases, release products, work pieces or equipment, Treatment by dipping and pouring, Spraying, Rolling, Brushing**

SU17 PC24 PROC7 PROC8a PROC8b PROC9 PROC10 PROC13 ERC4

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**Use: ES30, ATIEL ATC C [p], Professional use, Lubricants, greases, release products, work pieces or equipment, Treatment by dipping and pouring, Spraying, Rolling, Brushing**  
**SU17 PC25 PROC8a PROC10 PROC11 PROC13 ERC8a**

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**Use: ES31, ATIEL ATC F [i], Industrial use, Lubrication at high energy conditions and in partly open process, Metal working fluids**  
**SU17 PC25 PROC1 PROC2 PROC8b PROC17 ERC4**

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**Use: ES32, ATIEL ATC F [p], Professional use, Lubrication at high energy conditions and in partly open process, Metal working fluids**  
**SU17 PC25 PROC1 PROC8b PROC17 ERC8a**

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**1. Short title of Exposure Scenario: ES2, Formulation of preparations, Adhesives, sealants**

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Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) <b>SU19:</b> Building and construction work <b>SU24:</b> Scientific research and development
Chemical product category	: <b>PC1:</b> Adhesives, sealants <b>PC9a:</b> Coatings and paints, thinners, paint removers <b>PC16:</b> Heat transfer fluids <b>PC21:</b> Laboratory chemicals <b>PC30:</b> Photo-chemicals
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises

- 5/202
- 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)
- PROC15:

Use as laboratory reagent
- PROC19:

Hand-mixing with intimate contact and only PPE available

Environmental Release Categories : **ERC2:** Formulation of preparations

2.1 Contributing scenario controlling environmental exposure for: **ERC2: Formulation of preparations**

**Amount used**

- Daily amount per site : 500 kg
- Annual amount per site : 80000 kg

**Frequency and duration of use**

- Single exposure : 250 days/year
- Continuous exposure : < 8 hours/day

**Environment factors not influenced by risk management**

- Flow rate of receiving surface water : 0 m3/d

**Other given operational conditions affecting environmental exposure**

- Number of emission days per year : 250
- Emission or Release Factor: Air : 0.000001 %
- Emission or Release Factor: Water : 0.001 %
- Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

- Air : Exhaust ventilation equipped with scrubbers.
- Water : Biological waste water treatment plant, Maximize waste water reuse.
- Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant	: Onsite sewage treatment plant	6/202
Flow rate of sewage treatment plant effluent	: 0 m3/d	
Effectiveness (of a measure)	: 90 %	
Sludge Treatment	: Can be incinerated, when in compliance with local regulations.	

### Conditions and measures related to external treatment of waste for disposal

Waste treatment	: Do not dispose of waste into sewer., Ensure all waste water is collected and treated via a WWTP., Acclimated biological treatment
Disposal methods	: Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. (Effectiveness (of a measure): > 90 %)
Waste treatment	: Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	: Provide adequate information, instruction and training for operators., When not in use, keep containers tightly closed., Good housekeeping- e.g. inspection procedures will ensure that there are no leaks to soil., Bund storage facilities to prevent soil and water pollution in the event of spillage., Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.
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## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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### Product characteristics

Physical Form (at time of use)	: Liquid substance
Process Temperature	: <= 40 °C

### Frequency and duration of use

Application duration	: < 480 min
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### Human factors not influenced by risk management

Dermal exposure	: 240 cm3, Palm of one hand
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### Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

## **2.3 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions**

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### **Product characteristics**

Process Temperature : <= 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

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### **Product characteristics**

Process Temperature : <= 40 °C

### **Frequency and duration of use**

Application duration : < 480 min  
Remarks : Occasional exposure

### **Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>2</sup>, Palm of one hand

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

## Technical conditions and measures

8/202

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

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### Product characteristics

Process Temperature : <= 40 °C

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm2)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Transfer via enclosed lines., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.6 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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### Product characteristics

Process Temperature : < 40 °C

9/202

#### Frequency and duration of use

Application duration : < 480 min  
Remarks : Continuous use/release

#### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm2)

#### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

#### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

### 2.7 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Waste management: storage of waste prior to removal for off-site management

#### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

#### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

#### Human factors not influenced by risk management

Dermal exposure : 960 cm3

#### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Loading of application equipment (liquid products) - transfer of material from one container to another, Filling

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Handle substance within a predominantly closed system provided with extract ventilation., Clear transfer lines prior to de-coupling., Use dedicated equipment., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Safety glasses with side-shields conforming to EN166

## 2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

11/202

Activity : Filling, Mixing

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm2)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.10 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

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### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

12/202

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.11 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available

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Activity

: Mixing, Hand application - finger paints, pastels - indoor

## Product characteristics

Physical Form (at time of use)

: Liquid mixture

Process Temperature

: < 40 °C

## Frequency and duration of use

Application duration

: < 480 min

Remarks

: Occasional exposure

## Human factors not influenced by risk management

Dermal exposure

: Assumes that potential dermal contact is limited to hands and forearms.

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

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

13/202

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC2	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.675
ERC2	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.627
ERC2	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/L	< 0.01
ERC2	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/L	0.402
ERC2	EUSES		Soil	Predicted exposure concentration	0.051mg/l	0.02
ERC2	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.041 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.034 mg/kg	0.082
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.041 mg/m <sup>3</sup>	< 0.01
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.069 mg/kg	0.165
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.041 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.035 mg/kg	0.083
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation	0.041 mg/m <sup>3</sup>	< 0.01

			systemic exposure		
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.034 mg/kg	0.082 14/202
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.012 mg/m <sup>3</sup>	0.084
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC15	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC15	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.24 mg/m <sup>3</sup>	< 0.01
PROC15	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.001 mg/kg	< 0.01
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC19	ECETOC TRA	Dermal exposure, Use of appropriate dermal protection, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.041 mg/kg	0.099

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

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## 1. Short title of Exposure Scenario: ES3, ATIEL ATC A [i], Formulation of preparations, Lubricants, greases, release products, Lubricant, Additive, Metal working fluids

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Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) <b>SU17:</b> General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	: <b>PC17:</b> Hydraulic fluids <b>PC24:</b> Lubricants, greases, release products <b>PC25:</b> Metal working fluids
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC15:</b> Use as laboratory reagent
Environmental Release Categories	: <b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles

## 2.1 Contributing scenario controlling environmental exposure for: ERC2: Formulation of preparations

### Amount used

Daily amount per site	: 5000 kg
Annual amount per site	: 800000 kg

### Frequency and duration of use

Single exposure	: < 8 hours/day, Sometimes during the working day, only for short periods of time
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### Other given operational conditions affecting environmental exposure

Intermittent use/release	
Number of emission days per year	: 250
Emission or Release Factor: Air	: 0.000001 %
Emission or Release Factor: Water	: 0.001 %
Emission or Release Factor: Soil	: 0 %

### Technical conditions and measures / Organizational measures

Air	: Exhaust ventilation equipped with scrubbers.
Water	: Onsite wastewater treatment required., Maximize waste water reuse.
Soil	: Do not allow contact with soil, surface or ground water. (Effectiveness (of a measure): 100 %)
Remarks	: Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant	: Onsite sewage treatment plant
Flow rate of sewage treatment plant effluent	: 0 m3/d
Effectiveness (of a measure)	: > 90 %
Sludge Treatment	: Biological elimination, No application of sewage sludge to soil

### Conditions and measures related to external treatment of waste for disposal

Waste treatment	: Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.
Disposal methods	: Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. (Effectiveness (of a measure): > 90 %)
Waste treatment	: Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	: Provide adequate information, instruction and training for operators.
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## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure<sup>17/202</sup>

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### Product characteristics

Physical Form (at time of use) : Liquid substance  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

## 2.3 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

---

### Product characteristics

Physical Form (at time of use) : Liquid substance  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Sometimes during the working day, only for short periods of time, Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use product only in closed system.

18/202

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

---

Activity : Preparation of material for application (liquid products) - batch, indoor

### **Product characteristics**

Physical Form (at time of use) : Liquid substance

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

Remarks : Occasional exposure

### **Human factors not influenced by risk management**

Dermal exposure : 240 cm3

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Transfer via enclosed lines., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : Preparation of material for application (liquid products) - batch, indoor, Filling, Mixing

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Vapour pressure : < 100 Pa  
Process Temperature : <= 160 °C

19/202

#### **Frequency and duration of use**

Application duration : < 480 min

#### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

#### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

#### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

### **2.6 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

---

#### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : <= 40 °C

#### **Frequency and duration of use**

Application duration : < 480 min

#### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

#### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

#### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 % 20/202

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.7 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

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### **Product characteristics**

Physical Form (at time of use) : Liquid substance

Process Temperature : <= 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 %

Use drum pumps or carefully pour from container.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

21/202

### **Frequency and duration of use**

Application duration : < 240 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Handle substance within a predominantly closed system provided with extract ventilation., Transfer via enclosed lines., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Transfer via enclosed lines., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 %<sup>22/202</sup>

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.10 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent**

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Activity : Laboratory use: QC laboratory use

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 240 cm3

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Use suitable eye protection.

**3. Exposure estimation and reference to its source**

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**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
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ERC2	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.675 23/202
ERC2	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.627
ERC2	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/L	< 0.01
ERC2	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/L	0.402
ERC2	EUSES		Soil	Predicted exposure concentration	0.052mg/L	0.141
ERC2	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.041 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.034 mg/kg	0.082
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.069 mg/m <sup>3</sup>	0.165
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	< 0.01
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.041 mg/m <sup>3</sup>	0.281
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.035 mg/m <sup>3</sup>	0.083
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	< 0.01
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.122 mg/m <sup>3</sup>	0.844
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.489 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal	0.041 mg/kg	0.099

			systemic exposure		
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169 24/202
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.021 mg/m <sup>3</sup>	0.049
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	< 0.01
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC15	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC15	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC15	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.204 mg/kg	0.49

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES4, Adhesives, sealants, Industrial use

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Main User Groups : : Industrial uses: Uses of substances as such or in preparations at industrial sites

Sectors of end-use : **SU10:** Formulation [mixing] of preparations and/or re-packaging  
**SU19:** Building and construction work  
**SU24:** Scientific research and development

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

Environmental Release Categories : **ERC5:** Industrial use resulting in inclusion into or onto a matrix

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## 2.1 Contributing scenario controlling environmental exposure for: ERC5: Industrial use resulting in inclusion into or onto a matrix

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### Amount used

Daily amount per site : 3 kg  
 Annual amount per site : 280 kg

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
 Number of emission days per year : 100  
 Emission or Release Factor: Air : 0.017 %  
 Emission or Release Factor: Water : 0 %  
 Emission or Release Factor: Soil : 0 %

### Technical conditions and measures / Organizational measures

Air : Exhaust ventilation equipped with scrubbers.  
 Water : Maximize waste water reuse.  
 Soil : Do not allow contact with soil, surface or ground water. (Effectiveness (of a measure): 100 %)  
 Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment : 2,000 m3/d

plant effluent		
Effectiveness (of a measure)	:	100 %
Sludge Treatment	:	Controlled application of sewage sludge to agricultural soil

26/202

### Conditions and measures related to external treatment of waste for disposal

Waste treatment	:	Municipal waste 'collection' system
Disposal methods	:	Dispose of as hazardous waste in compliance with local and national regulations.
Waste treatment	:	Dispose of as hazardous waste in compliance with local and national regulations.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	:	Provide adequate information, instruction and training for operators.
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## 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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### Product characteristics

Physical Form (at time of use)	:	Liquid mixture
Process Temperature	:	<= 40 °C

### Frequency and duration of use

Application duration	:	< 480 min
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### Human factors not influenced by risk management

Dermal exposure	:	Palms of both hands (480 cm <sup>2</sup> )
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### Other operational conditions affecting workers exposure

Outdoor / Indoor	:	Indoor
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### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

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## 2.3 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

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## Product characteristics

27/202

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

## Frequency and duration of use

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : 1500cm<sup>2</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

## Technical conditions and measures

Provide exhaust ventilation close to floor level., Carry out in a vented booth or extracted enclosure.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with filter for organic vapour, Respirator with a full face mask Lightweight protective clothing, Rubber or plastic boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

---

## Product characteristics

Physical Form (at time of use) : Liquid substance  
Process Temperature : <= 40 °C

## Frequency and duration of use

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 %

Use drum pumps or carefully pour from container.

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

28/202

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.5 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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Activity : Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Transfer via enclosed lines., Provide extract ventilation to material transfer points and other openings. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.6 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

29/202

**Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor use

**Technical conditions and measures**

Provide exhaust ventilation close to floor level., Carry out in a vented booth or extracted enclosure.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with filter for organic vapour, Respirator with a full face mask Lightweight protective clothing, Rubber or plastic boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.7 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring**

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Activity : Impregnation, Dipping, Immersion operations

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

30/202

## 2.8 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available

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Activity : Mixing, Hand application - finger paints, pastels - indoor

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : Assumes that potential dermal contact is limited to hands and forearms.

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC5	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675
ERC5	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627

ERC5	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/L	0.432 31/202
ERC5	EUSES		Marine sedi- ment	Predicted exposure concentration	0.007mg/L	0.402
ERC5	EUSES		Soil	Predicted exposure concentration	0.000008mg/L	0.134
ERC5	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC7	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.0092 mg/m <sup>3</sup>	0.06
PROC7	ECETOC TRA	Inhalation exposure, Indoor	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure, Indoor	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC7	ART	Inhalation exposure, Outdoor, Use of appropriate Respiratory Protective Equipment	Chronic inhalation systemic exposure	0.053 mg/m <sup>3</sup>	0.37
PROC7	ECETOC TRA	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure, Outdoor	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC10	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure,	Acute inhalation	0.001 mg/m <sup>3</sup>	< 0.01

		Indoor	systemic exposure		
PROC10	ECETOC TRA	Dermal exposure, Indoor, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.0823 mg/kg	0.2 32/202
PROC10	ART	Inhalation exposure, Outdoor	Chronic inhalation systemic exposure	0.023 mg/m <sup>3</sup>	0.16
PROC10	ART	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.059 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, Outdoor	Chronic dermal systemic exposure	0.274 mg/kg	0.659
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC19	ECETOC TRA	Dermal exposure, Use of appropriate dermal protection, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.041 mg/kg	0.099

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES5, Adhesives, sealants, Professional use

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Main User Groups : : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Sectors of end-use : **SU11:** Manufacture of rubber products  
**SU12:** Manufacture of plastics products, including compound-  
ing and conversion

Chemical product category	: PC1: Adhesives, sealants
Process categories	: PROC3: Use in closed batch process (synthesis or formula- tion) 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 con- tainers (dedicated filling line, including weighing) PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring PROC19: Hand-mixing with intimate contact and only PPE available
Article categories	: AC4: Stone, plaster, cement, glass and ceramic articles AC5: Fabrics, textiles and apparel AC10: Rubber articles AC13: Plastic articles
Environmental Release Categories	: ERC8a: Wide dispersive indoor use of processing aids in open systems

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2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide  
dispersive indoor use of processing aids in open systems

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Amount used

Daily amount per site	: 3 kg
Annual amount per site	: 290 kg

Other given operational conditions affecting environmental exposure

Number of emission days per year : 100  
Emission or Release Factor: Air : 0 %  
Emission or Release Factor: Water : 0.015 %  
Emission or Release Factor: Soil : 0 %

34/202

#### **Technical conditions and measures / Organizational measures**

Air : Exhaust ventilation equipped with scrubbers.  
Water : Maximize waste water reuse.  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment : 2,000 m<sup>3</sup>/d  
plant effluent  
Effectiveness (of a measure) : 31.3 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

#### **Conditions and measures related to disposal of articles at end of service life**

Waste treatment : Do not dispose of waste into sewer.  
Disposal methods : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.  
Waste treatment : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

#### **Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

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### **2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

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#### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

#### **Frequency and duration of use/exposure**

Application duration : < 480 min  
Remarks : Occasional exposure

#### **Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>3</sup>

#### **Other operational conditions affecting workers exposure**

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

(Effectiveness (of a measure): 90 %

Use suitable eye protection.

**2.3 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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Activity : Process sampling

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 60 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Suitable mask with particle filter P3 (European Norm 143) (Effectiveness (of a measure): 95 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

(Effectiveness (of a measure): 90 %

Use suitable eye protection.

**2.4 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

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Activity : Mixing

36/202

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

**2.5 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Waste management: storage of waste prior to removal for off-site management

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm3

## Other operational conditions affecting workers exposure

37/202

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with a vapour filter (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## 2.6 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Loading of application equipment (liquid products) - transfer of material from one container to another, Application in a closed system, Filling

## Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

## Frequency and duration of use/exposure

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Clear transfer lines prior to de-coupling., Use dedicated equipment., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Respiratory protection complying with EN 141., P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

(Effectiveness (of a measure): 90 %

38/202

Safety glasses with side-shields conforming to EN166

## **2.7 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : Filling, Mixing

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.8 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

## Other operational conditions affecting workers exposure

39/202

Outdoor / Indoor : Indoor

## Technical conditions and measures

Carry out in a vented booth or extracted enclosure., Provide extraction ventilation at points where emissions occur., Use ventilation to extract vapours from freshly coated articles/objects. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Full protective suit, Boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Safety glasses with side-shields conforming to EN166

## 2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

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### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

### Frequency and duration of use/exposure

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 1500cm<sup>2</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Carry out in a vented booth or extracted enclosure., Provide extraction ventilation at points where emissions occur., Use ventilation to extract vapours from freshly coated articles/objects. Indoor

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Full protective suit, Boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Safety glasses with side-shields conforming to EN166

## 2.10 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

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40/202

Activity : Impregnation, Dipping, Immersion operations

### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use/exposure

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respiratory protection complying with EN 141., P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## 2.11 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available

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Activity : Mixing, Hand application - finger paints, pastels - indoor

### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use/exposure

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Assumes that potential dermal contact is limited to hands and forearms.

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

41/202

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur.

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

Ensure operatives are trained to minimise exposures.

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

Suitable mask with particle filter P3 (European Norm 143) (Effectiveness (of a measure): 95 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.

(Effectiveness (of a measure): 90 %

Use suitable eye protection.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a	EUSES		Fresh water	Predicted exposure concentration	0.0002241mg /L	0.723
ERC8a	EUSES		Marine water	Predicted exposure concentration	0.0000209mg /L	0.675
ERC8a	EUSES		Fresh water sediment	Predicted exposure concentration	0.086mg/L	0.463
ERC8a	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/L	0.433
ERC8a	EUSES		Soil	Predicted exposure concentration	0.053mg/l	0.021
ERC8a	EUSES		STP	Predicted exposure concentration	0.000149mg/ L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.0169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal	0.041 mg/kg	0.099

			systemic exposure		
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.002 mg/m <sup>3</sup>	0.011 42/202
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.412 mg/kg	0.988
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.562
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.412 mg/kg	0.329
PROC10	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.007
PROC10	ART	Inhalation exposure	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.0823 mg/kg	0.2
PROC11	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.0092 mg/m <sup>3</sup>	0.06
PROC11	ECETOC TRA	Inhalation exposure, Indoor	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC11	ECETOC TRA	Dermal exposure, Indoor, With Local Exhaust Ventilation, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.214 mg/kg	0.78
PROC11	ART	Inhalation exposure, Outdoor, Use of appropriate Respiratory Protective Equipment	Chronic inhalation systemic exposure	0.007 mg/m <sup>3</sup>	0.048
PROC11	ECETOC TRA	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.07 mg/m <sup>3</sup>	< 0.01

PROC11	ECETOC TRA	Dermal exposure, Outdoor, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.214 mg/kg	0.78 43/202
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC19	ECETOC TRA	Dermal exposure, Use of appropriate dermal protection, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.274 mg/kg	0.658

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES6, Adhesives, sealants, Consumer use

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Main User Groups : : Consumer uses: Private households (= general public = consumers)

Sectors of end-use : : Consumer uses: Private households (= general public = consumers)

Chemical product category : **PC1:** Adhesives, sealants

Chemical product sub-category : **PC1\_1:** Glues, hobby use  
**PC1\_2:** Glues DIY-use (carpet glue, tile glue, wood parquet)

Article categories : **AC4:** Stone, plaster, cement, glass and ceramic articles  
**AC5:** Fabrics, textiles and apparel  
**AC10:** Rubber articles  
**AC13:** Plastic articles

Environmental Release Categories : **ERC8a:** Wide dispersive indoor use of processing aids in open systems

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## 2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

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### Amount used

Daily amount for wide dispersive uses : 5 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Emission or Release Factor: Air : 0.99 %  
Emission or Release Factor: Water : 0.01 %  
Emission or Release Factor: Soil : 0.005 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m3/d  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : No specific measures identified., Household solid waste (e.g., product packaging) is treated at municipal waste disposal sites.  
Disposal methods : Municipal sewage treatment plant is assumed., Disposed off through appropriate waste disposal carriers/authorities.

Waste treatment : Disposed off through appropriate waste disposal carriers/authorities., Municipal sewage treatment plant is assumed.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

**2.2 Contributing scenario controlling consumer exposure for: AC13, AC4, AC5, AC10: Plastic articles, Stone, plaster, cement, glass and ceramic articles, Fabrics, textiles and apparel, Rubber articles**

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture

**Amount used**

Amount used per event : 0.009 kg

**Frequency and duration of use/exposure from service life**

Glues, hobby use : < 240 min  
Frequency of use : 1 uses per day

**Human factors not influenced by risk management**

Dermal exposure : Assumes that potential dermal contact is limited to fingertips.

**Other given operational conditions affecting consumers exposure from article service life**

Room size : 20 m3  
Remarks : Covers use under typical household ventilation.

**Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)**

Ensure adequate ventilation.

**3. Exposure estimation and reference to its source**

**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a	EUSES		Fresh water	Predicted exposure concentration	0.000226mg/l	0.73
ERC8a	EUSES		Marine water	Predicted exposure	0.000021mg/l	0.682

ERC8a	EUSES		Fresh water sediment	Predicted exposure concentration	0.087mg/kg dry weight (d.w.)	0.468 46/202
ERC8a	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/kg dry weight (d.w.)	0.437
ERC8a	EUSES		Soil	Predicted exposure concentration	0.054mg/kg dry weight (d.w.)	0.021
ERC8a	EUSES		STP	Predicted exposure concentration	0.000172mg/l	< 0.01

### Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC1_1	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC1_1	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg-day	0.43
PC1_1	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg-day	0
PC1_2	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC1_2	ECETOC TRA	Dermal exposure	Systemic effects	0.01 mg/kg-day	0.07
PC1_2	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg-day	0
PC1_3	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC1_3	ECETOC TRA	Dermal exposure	Systemic effects	0.03 mg/kg-day	0.14
PC1_3	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg-day	0
PC1_4	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC1_4	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg-day	0.43
PC1_4	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg-day	0

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## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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# 1. Short title of Exposure Scenario: ES7, Formulation of preparations, Coatings and paints, thinners, paint removers, Industrial use

47/202

Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU6a:</b> Manufacture of wood and wood products <b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) <b>SU19:</b> Building and construction work <b>SU24:</b> Scientific research and development
Chemical product category	: <b>PC9a:</b> Coatings and paints, thinners, paint removers
Process categories	: <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC7:</b> Industrial spraying <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC10:</b> Roller application or brushing <b>PROC13:</b> Treatment of articles by dipping and pouring <b>PROC19:</b> Hand-mixing with intimate contact and only PPE available
Article categories	: <b>AC1:</b> Vehicles <b>AC4:</b> Stone, plaster, cement, glass and ceramic articles <b>AC7:</b> Metal articles <b>AC8:</b> Paper articles <b>AC11:</b> Wood articles <b>AC13:</b> Plastic articles
Environmental Release Categories	: <b>ERC5:</b> Industrial use resulting in inclusion into or onto a matrix

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## 2.1 Contributing scenario controlling environmental exposure for: ERC5: Industrial use resulting in inclusion into or onto a matrix

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Amount used

Daily amount per site : 3 kg  
Annual amount per site : 280 kg

48/202

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Number of emission days per year : 100  
Emission or Release Factor: Air : 0.017 %  
Emission or Release Factor: Water : 0 %  
Emission or Release Factor: Soil : 0 %

### Technical conditions and measures / Organizational measures

Air : Exhaust ventilation equipped with scrubbers.  
Water : Maximize waste water reuse.  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m3/d  
Effectiveness (of a measure) : 100 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

### Conditions and measures related to disposal of articles at end of service life

Waste treatment : Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge., Do not dispose of waste into sewer.  
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.  
Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Mixing

### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

49/202

### **Frequency and duration of use/exposure**

Application duration : < 480 min  
Remarks : Continuous use/release

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.3 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor use

### **Technical conditions and measures**

Carry out in a vented booth provided with laminar airflow., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Suitable mask with particle filter P3 (European Norm 143) Full protective suit, Boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

**2.4 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

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Activity : Filling

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

**2.5 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

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Activity : Mixing

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

51/202

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.6 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor use

### **Technical conditions and measures**

Carry out in a vented booth or extracted enclosure., Provide the operation with a properly sited receiving hood., Provide extraction ventilation at points where emissions occur. Indoor

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

Ensure operatives are trained to minimise exposures.

52/202

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

Boots, Full protective suit, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.7 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring**

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### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.9 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available**

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### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

Human factors not influenced by risk management

53/202

Dermal exposure : Assumes that potential dermal contact is limited to hands and forearms.

Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Exhaust ventilation equipped with scrubbers.

Organisational measures to prevent /limit releases, dispersion and exposure

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with ‘basic’ employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC5	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /l	0.675
ERC5	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /l	0.627
ERC5	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/kg dry weight (d.w.)	0.432
ERC5	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC5	EUSES		Soil	Predicted exposure concentration	0.0000084mg /kg dry weight (d.w.)	0.126
ERC5	EUSES		STP	Predicted exposure concentration	0mg/l	< 0.01

Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
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PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	54/202 < 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC7	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.00076 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Inhalation exposure, Indoor	Acute inhalation systemic exposure	0.00076 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Inhalation exposure, Outdoor, Use of appropriate Respiratory Protective Equipment	Chronic inhalation systemic exposure	0.090 mg/m <sup>3</sup>	0.62
PROC7	ECETOC TRA	Dermal exposure, Indoor	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC7	ECETOC TRA	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure, Outdoor	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC10	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure, Indoor	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, Indoor, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.823 mg/kg	0.2
PROC10	ART	Inhalation exposure, Outdoor	Chronic inhalation systemic exposure	0.023 mg/m <sup>3</sup>	0.16
PROC10	ART	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.059 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, Outdoor	Chronic dermal systemic exposure	0.274 mg/kg	0.659
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC19	ECETOC TRA	Inhalation exposure,	Chronic inhalation	0.024 mg/m <sup>3</sup>	0.169

		With Local Exhaust Ventilation	systemic exposure		
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	<sup>55/202</sup> < 0.01
PROC19	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.041 mg/kg	0.099

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES8, Coatings and paints, thinners, paint removers, Professional use

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Main User Groups : : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Sectors of end-use : **SU11:** Manufacture of rubber products  
**SU12:** Manufacture of plastics products, including compounding and conversion  
**SU18:** Manufacture of furniture  
**SU19:** Building and construction work

Chemical product category : **PC9a:** Coatings and paints, thinners, paint removers

Process categories : **PROC3:** Use in closed batch process (synthesis or formulation)  
**PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises  
**PROC5:** Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)  
**PROC8a:** Transfer of substance or preparation (charging/

discharging) from/ to vessels/ large containers at non-dedicated facilities

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

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

**PROC10:** Roller application or brushing

**PROC11:** Non industrial spraying

**PROC13:** Treatment of articles by dipping and pouring

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

Article categories : **AC1:** Vehicles  
**AC4:** Stone, plaster, cement, glass and ceramic articles  
**AC7:** Metal articles  
**AC8:** Paper articles  
**AC11:** Wood articles  
**AC13:** Plastic articles

Environmental Release Categories : **ERC8a:** Wide dispersive indoor use of processing aids in open systems

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## 2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

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### Amount used

Daily amount for wide dispersive uses : 29 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Emission or Release Factor: Air : 0.99 %  
Emission or Release Factor: Water : 0.01 %  
Emission or Release Factor: Soil : 0.005 %

### Technical conditions and measures / Organizational measures

Air : Release estimates for evaporative emissions  
Water : Equipment cleaning with minimized emissions to wastewater  
Soil : Prevent leaks and prevent soil / water pollution caused by

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

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2,000 m <sup>3</sup> /d
Effectiveness (of a measure)	: 31.33 %
Sludge Treatment	: Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to disposal of articles at end of service life**

Waste treatment	: Municipal waste 'collection' system
Disposal methods	: Dispose of as hazardous waste in compliance with local and national regulations.
Waste treatment	: Dispose of as hazardous waste in compliance with local and national regulations.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice	: Provide adequate information, instruction and training for operators.
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**2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

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**Product (article) characteristic**

Physical Form (at time of use)	: Liquid mixture
Process Temperature	: < 40 °C

**Frequency and duration of use/exposure**

Application duration	: < 480 min
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**Human factors not influenced by risk management**

Dermal exposure	: 240 cm <sup>3</sup>
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**Other operational conditions affecting workers exposure**

Outdoor / Indoor	: Indoor
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**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 90 %  
Use suitable eye protection.

58/202

## **2.3 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : Mixing

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 60 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Suitable mask with particle filter P3 (European Norm 143) (Effectiveness (of a measure): 95 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

---

Activity : Mixing

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm2)

59/202

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## 2.5 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use/exposure

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 90 %  
Use suitable eye protection.

60/202

## **2.6 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Product delivery/storage - product storage - indoor, Filling,  
Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
(Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## **2.7 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

---

Activity : Mixing, Formulation

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

61/202

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

**2.8 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

---

Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Carry out in a vented booth or extracted enclosure., Use only in area provided with appropriate exhaust ventilation. Indoor

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

Ensure operatives are trained to minimise exposures.

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

Full protective suit, Boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection. 62/202

### 2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Manual spray application of coatings - outdoor, Manual spray application of coatings - indoor

#### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

#### Frequency and duration of use/exposure

Application duration : < 480 min

#### Human factors not influenced by risk management

Dermal exposure : 1500cm<sup>2</sup>

#### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor use

#### Technical conditions and measures

Carry out in a vented booth or extracted enclosure., Ensure fixed capturing hood is used. Indoor

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

Ensure operatives are trained to minimise exposures.

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

Full protective suit, Boots, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

### 2.10 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

---

Activity : Immersion operations, Dipping

#### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

#### Frequency and duration of use/exposure

Application duration : < 48 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.11 Contributing scenario controlling worker exposure for: PROC19: Hand-mixing with intimate contact and only PPE available**

---

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141) (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training.  
 (Effectiveness (of a measure): 90 %  
 Use suitable eye protection.

64/202

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a	EUSES		Fresh water	Predicted exposure concentration	0.0003082mg/L	0.994
ERC8a	EUSES		Marine water	Predicted exposure concentration	0.0000294mg/L	0.947
ERC8a	EUSES		Fresh water sediment	Predicted exposure concentration	0.118mg/L	0.637
ERC8a	EUSES		Marine sediment	Predicted exposure concentration	0.011mg/L	0.607
ERC8a	EUSES		Soil	Predicted exposure concentration	0.069mg/kg	0.027
ERC8a	EUSES		STP	Predicted exposure concentration	0.000996mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.002 mg/m <sup>3</sup>	0.017
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.412 mg/kg	0.988
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal	0.274 mg/kg	0.658

			systemic exposure		
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.412 mg/kg	0.329
PROC10	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure, Indoor	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation, Indoor	Chronic dermal systemic exposure	0.0823 mg/kg	0.2
PROC10	ART	Inhalation exposure, Outdoor	Chronic inhalation systemic exposure	0.023 mg/m <sup>3</sup>	0.16
PROC10	ART	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.059 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, Outdoor	Chronic dermal systemic exposure	0.274 mg/kg	0.659
PROC11	ART	Inhalation exposure, Indoor	Chronic inhalation systemic exposure	0.0092 mg/m <sup>3</sup>	0.06
PROC11	ECETOC TRA	Inhalation exposure, Indoor	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC11	ECETOC TRA	Dermal exposure, Indoor, With Local Exhaust Ventilation, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.214 mg/kg	0.78
PROC11	ECETOC TRA	Inhalation exposure, Outdoor, Use of appropriate Respiratory Protective Equipment	Chronic inhalation systemic exposure	0.007 mg/m <sup>3</sup>	0.048
PROC11	ECETOC TRA	Inhalation exposure, Outdoor	Acute inhalation systemic exposure	0.07 mg/m <sup>3</sup>	< 0.01
PROC11	ECETOC TRA	Dermal exposure, Outdoor, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.214 mg/kg	0.78
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation	0.008 mg/m <sup>3</sup>	0.056

			systemic exposure		
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01 60/202
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC19	ECETOC TRA	Inhalation exposure, With Local Exhaust Ventilation	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC19	ECETOC TRA	Dermal exposure, Use of appropriate dermal protection, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.274 mg/kg	0.658

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES9, Coatings and paints, thinners, paint removers, Consumer use

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Main User Groups	: : Consumer uses: Private households (= general public = consumers)
Sectors of end-use	: : Consumer uses: Private households (= general public = consumers)
Chemical product category	: <b>PC9a:</b> Coatings and paints, thinners, paint removers
Chemical product sub-category	: <b>PC9a_1, PC15_1:</b> Waterborne latex wall paint <b>PC9a_2, PC15_2:</b> Solvent rich, high solid, water borne paint <b>PC9a_3, PC15_3:</b> Aerosol spray can <b>PC9a_4, PC15_4:</b> Removers (paint-, glue-, wall paper-, sealant-remover)

Article categories : **AC1:** Vehicles  
**AC7:** Metal articles  
**AC8:** Paper articles  
**AC11:** Wood articles  
**AC13:** Plastic articles  
**AC4:** Stone, plaster, cement, glass and ceramic articles

Environmental Release Categories : **ERC8a:** Wide dispersive indoor use of processing aids in open systems

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## 2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

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### Amount used

Daily amount for wide dispersive uses : 5 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Emission or Release Factor: Air : 0.99 %  
Emission or Release Factor: Water : 0.01 %  
Emission or Release Factor: Soil : 0.005 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : Municipal waste 'collection' system  
Disposal methods : Can be landfilled or incinerated, when in compliance with local regulations.  
Waste treatment : Can be landfilled or incinerated, when in compliance with local regulations.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

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## 2.2 Contributing scenario controlling consumer exposure for: PROC10: Roller application or brushing, PC9a: Coatings and paints, thinners, paint removers

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Activity : Filling, Disposal of wastes

### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture

### Amount used

Amount used per event : 2.76 kg

### Frequency and duration of use/exposure from service life

Waterborne wall paint : < 132 min  
Frequency of use : 4 days/year  
Remarks : Intermittent use/release

### Human factors not influenced by risk management

Dermal exposure : Assumes that potential dermal contact is limited to hands.

### Other given operational conditions affecting consumers exposure from article service life

Room size : 20 m3  
Remarks : Covers use under typical household ventilation.

### Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)

Ensure adequate ventilation.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a	EUSES		Fresh water	Predicted exposure concentration	0.0002263mg/L	0.73
ERC8a	EUSES		Marine water	Predicted exposure concentration	0.0000212mg/L	0.682
ERC8a	EUSES		Fresh water sediment	Predicted exposure concentration	0.087mg/L	0.468

ERC8a	EUSES		Marine sedi- ment	Predicted exposure concentration	0.008mg/L	0.437 69/202
ERC8a	EUSES		Soil	Predicted exposure concentration	0.054mg/kg	0.021
ERC8a	EUSES		STP	Predicted exposure concentration	0.000172mg/ L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC9a_1, PC15_1	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_1, PC15_1	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_1, PC15_1	ECETOC TRA	Dermal exposure	Systemic effects	0.01 mg/kg	0.06
PC9a_2, PC15_2	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_2, PC15_2	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_2, PC15_2	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.44
PC9a_3, PC15_3	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_3, PC15_3	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_3, PC15_3	ECETOC TRA	Dermal exposure	Systemic effects	0 mg/kg	0
PC9a_4, PC15_4	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_4, PC15_4	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_4, PC15_4	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.45

### Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC9a_1, PC15_1	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_1, PC15_1	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_1, PC15_1	ECETOC TRA	Dermal exposure	Systemic effects	0.01 mg/kg	0.06
PC9a_2, PC15_2	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0

PC9a_2, PC15_2	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0 <small>70/202</small>
PC9a_2, PC15_2	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.44
PC9a_3, PC15_3	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_3, PC15_3	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_3, PC15_3	ECETOC TRA	Dermal exposure	Systemic effects	0 mg/kg	0
PC9a_4, PC15_4	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC9a_4, PC15_4	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC9a_4, PC15_4	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.45

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES10, Formulation of preparations, Heat transfer fluids, Industrial use

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Main User Groups : : Industrial uses: Uses of substances as such or in preparations at industrial sites

Sectors of end-use : **SU8:** Manufacture of bulk, large scale chemicals (including petroleum products)  
**SU24:** Scientific research and development

Chemical product category : **PC16:** Heat transfer fluids

Process categories : **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 formula-

tion)

**PROC4:** Use in batch and other process (synthesis) where opportunity for exposure arises 71/202

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

**PROC20:** Heat and pressure transfer fluids in dispersive, professional use but closed systems

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

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## 2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

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### Amount used

Daily amount per site : 2 kg  
Annual amount per site : 150 kg  
Annual amount for wide disperse uses : 15000 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 0 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Number of emission days per year : 100  
Emission or Release Factor: Air : 1 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 1 %

### Technical conditions and measures / Organizational measures

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)  
Water : Maximize waste water reuse., Biological waste water treatment plant  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment plant effluent : 0 m3/d

Effectiveness (of a measure) : 90 %

72/202

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : Acclimated biological treatment, Do not dispose of waste into sewer.

Disposal methods : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities., Dispose of as hazardous waste in compliance with local and national regulations. (Effectiveness (of a measure): > 90 %)

Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations., Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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Activity : Formulation

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

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

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

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## 2.3 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

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## Product characteristics

73/202

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

## Frequency and duration of use

Application duration : < 480 min  
Remarks : Sometimes during the working day, only for short periods of time, Occasional exposure

## Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

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## Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

## Frequency and duration of use

Application duration : < 480 min  
Remarks : Sometimes during the working day, only for short periods of time, Occasional exposure

## Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.5 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

---

Activity : Filling, Process sampling, Material transfers

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm2)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.6 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity	: Disposal of wastes, Filling, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes	75/202
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**Product characteristics**

Physical Form (at time of use)	: Liquid mixture
Process Temperature	: < 40 °C

**Frequency and duration of use**

Application duration	: < 480 min
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**Human factors not influenced by risk management**

Dermal exposure	: 960 cm <sup>3</sup>
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**Other operational conditions affecting workers exposure**

Outdoor / Indoor	: Indoor
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**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.7 Contributing scenario controlling worker exposure for: PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems**

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Activity	: Application in a closed system
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**Product characteristics**

Physical Form (at time of use)	: Liquid mixture
Process Temperature	: < 40 °C

**Frequency and duration of use**

Application duration	: < 480 min
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**Human factors not influenced by risk management**

Dermal exposure	: Palms of both hands (480 cm <sup>2</sup> )
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**Other operational conditions affecting workers exposure**

Outdoor / Indoor	: Indoor
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## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

76/202

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## 3. Exposure estimation and reference to its source

---

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC4	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675
ERC4	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC4	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC4	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC4	EUSES		Soil	Predicted exposure concentration	0.051mg/kg	0.02
ERC4	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.02 mg/kg	0.049
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal	0.041 mg/kg	0.099

			systemic exposure		
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169 7/202
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.05
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC20	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC20	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.01
PROC20	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.034 mg/kg	0.082

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES11, Laboratory chemicals, Industrial use

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Main User Groups : : Industrial uses: Uses of substances as such or in preparations at industrial sites

Sectors of end-use : **SU24:** Scientific research and development

Chemical product category : **PC21:** Laboratory chemicals

Process categories

: PROC3: Use in closed batch process (synthesis or formula-<sup>78/202</sup>tion)  
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  
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)  
PROC15: Use as laboratory reagent

Environmental Release Categories

: ERC5: Industrial use resulting in inclusion into or onto a matrix

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2.1 Contributing scenario controlling environmental exposure for: ERC5: Industrial use resulting in inclusion into or onto a matrix

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Amount used

Daily amount per site

: 2 kg

Annual amount per site

: 150 kg

Annual amount for wide disperse uses

: 15000 kg

Environment factors not influenced by risk management

Flow rate of receiving surface water

: 0 m3/d

Other given operational conditions affecting environmental exposure

Intermittent use/release

Number of emission days per year

: 100

Emission or Release Factor: Air

: 1 %

Emission or Release Factor: Water

: 1 %

Emission or Release Factor: Soil

: 1 %

Technical conditions and measures / Organizational measures

Air

: Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)

Water

: Maximize waste water reuse., Biological waste water treatment plant

Remarks

: Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment : 0 m3/d  
plant effluent  
Effectiveness (of a measure) : 90 %

79/202

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : Acclimated biological treatment  
Disposal methods : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities., Dispose of as hazardous waste in compliance with local and national regulations. (Effectiveness (of a measure): > 90 %)  
  
Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations., Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

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### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %)

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## **2.3 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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80/202

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

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Activity : Disposal of wastes, Filling, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

81/202

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.5 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

Activity

: Material transfers, Dipping, Immersion operations

## Product characteristics

Physical Form (at time of use)

: Liquid mixture

Process Temperature

: < 40 °C

## Frequency and duration of use

Application duration

: < 480 min

## Human factors not influenced by risk management

Dermal exposure

: Palms of both hands (480 cm2)

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.6 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

Activity : Laboratory use: QC laboratory use

82/202

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Use suitable eye protection.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC5	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.675
ERC5	EUSES		Marine water	Predicted exposure concentration	0.000195mg/L	0.627
ERC5	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC5	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC5	EUSES		Soil	Predicted exposure concentration	0.095mg/kg	0.038
ERC5	EUSES		STP	Predicted	0mg/L	< 0.01

				exposure concentration		83/202
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## Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC15	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC15	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC15	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.204 mg/kg	0.49

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## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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## 1. Short title of Exposure Scenario: ES12, Formulation of preparations, Photo-chemicals, Industrial use

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Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU7:</b> Printing and reproduction of recorded media <b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) <b>SU24:</b> Scientific research and development
Chemical product category	: <b>PC30:</b> Photo-chemicals
Process categories	: <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC7:</b> Industrial spraying <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC10:</b> Roller application or brushing
Environmental Release Categories	: <b>ERC5:</b> Industrial use resulting in inclusion into or onto a matrix

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### 2.1 Contributing scenario controlling environmental exposure for: ERC5: Industrial use resulting in inclusion into or onto a matrix

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#### Amount used

Daily amount per site	: 2 kg
Annual amount per site	: 150 kg
Annual amount for wide disperse	: 15000 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 0 m3/d

**Other given operational conditions affecting environmental exposure**

Intermittent use/release

Number of emission days per year : 100

Emission or Release Factor: Air : 1 %

Emission or Release Factor: Water : 1 %

Emission or Release Factor: Soil : 1 %

**Technical conditions and measures / Organizational measures**

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)

Water : Maximize waste water reuse., Biological waste water treatment plant

Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant

Flow rate of sewage treatment plant effluent : 0 m3/d

Effectiveness (of a measure) : 90 %

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : Acclimated biological treatment

Disposal methods : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities., Dispose of as hazardous waste in compliance with local and national regulations. (Effectiveness (of a measure): > 90 %)

Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations., Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

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**2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

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**Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

86/202

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.3 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

**Conditions and measures related to personal protection, hygiene and health evaluation** 87/202

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.4 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

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Activity : Mixing

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.5 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

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Activity : Manual spray application of coatings - indoor

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

**Frequency and duration of use**

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : 1500cm2

88/202

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Carry out in a vented booth or extracted enclosure., Provide the operation with a properly sited receiving hood.

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.6 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

## Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

## Frequency and duration of use

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : 960 cm3

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

89/202

## **2.7 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Product delivery/storage - product storage - indoor, Filling, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.8 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

---

Activity : Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

## Human factors not influenced by risk management

90/202

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.9 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

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Activity : In-door use, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Wiping

## Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

## Frequency and duration of use

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : 1500cm<sup>2</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Carry out in a vented booth or extracted enclosure., Provide the operation with a properly sited receiving hood., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit, 91/202  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

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

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#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC5	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675
ERC5	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC5	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC5	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC5	EUSES		Soil	Predicted exposure concentration	0.051mg/kg dry weight (d.w.)	0.02
ERC5	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.05
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation	0.024 mg/m <sup>3</sup>	< 0.01

			systemic exposure		
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099 92/202
PROC7	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.01 mg/m <sup>3</sup>	0.07
PROC7	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.01 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.012 mg/m <sup>3</sup>	0.084
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC10	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.0823 mg/kg	0.2

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES13, Photo-chemicals, Professional use

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Main User Groups	: : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	93/202
Sectors of end-use	: <b>SU7:</b> Printing and reproduction of recorded media <b>SU 10:</b> Formulation [mixing] of preparations and/ or re-packaging (excluding alloys) <b>SU24:</b> Scientific research and development	
Chemical product category	: <b>PC30:</b> Photo-chemicals	
Process categories	: <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC10:</b> Roller application or brushing <b>PROC11:</b> Non industrial spraying	
Article categories	: <b>AC7:</b> Metal articles <b>AC8:</b> Paper articles <b>AC13:</b> Plastic articles	
Environmental Release Categories	: <b>ERC8c:</b> Widespread use leading to inclusion into/onto article (indoor)	

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2.1 Contributing scenario controlling environmental exposure for: ERC8c: Wide dispersive indoor use resulting in inclusion into or onto a matrix

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Amount used

Daily amount per site	: 0.15 kg
Annual amount for wide disperse	: 15000 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

**Other given operational conditions affecting environmental exposure**

Intermittent use/release

Number of emission days per year : 100

Emission or Release Factor: Air : 1.5 %

Emission or Release Factor: Water : 0.1 %

Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Exhaust ventilation equipped with scrubbers. (Effectiveness (of a measure): 90 %)

Water : Maximize waste water reuse., Biological waste water treatment plant (Effectiveness (of a measure): 90 %)

Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d

Effectiveness (of a measure) : 31.33 %

Sludge Treatment : Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to disposal of articles at end of service life**

Waste treatment : Aqueous waste to be treated in on-site or municipal secondary biological treatment plants prior to discharge.

Disposal methods : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities., Dispose of as hazardous waste in compliance with local and national regulations. (Effectiveness (of a measure): > 90 %)

Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations., Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

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**2.2 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)**

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**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

95/202

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.3 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

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### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

96/202

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

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Activity : Mixing

### **Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use/exposure**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141) (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.5 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

**Product (article) characteristic**

97/202

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

**2.6 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Product delivery/storage - product storage - indoor, Filling, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

## Technical conditions and measures

98/202

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.7 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

## Product (article) characteristic

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

## Frequency and duration of use/exposure

Application duration : < 15 min

## Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Transfer via enclosed lines.

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

Ensure operatives are trained to minimise exposures., Automate activity where possible.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## **2.8 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

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Activity : Manual brush, roller, spreader application of coatings - indoor  
Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.9 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying**

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Manual spray application of coatings - indoor

**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

**Frequency and duration of use/exposure**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 1500cm2

100/202

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Carry out in a vented booth or extracted enclosure., Ensure fixed capturing hood is used.

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8c	EUSES		Fresh water	Predicted exposure concentration	0.0002143mg/L	0.691
ERC8c	EUSES		Marine water	Predicted exposure concentration	0.00002mg/L	0.644
ERC8c	EUSES		Fresh water sediment	Predicted exposure concentration	0.082mg/kg dry weight (d.w.)	0.443
ERC8c	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/kg dry weight (d.w.)	0.413
ERC8c	EUSES		Soil	Predicted exposure concentration	0.06mg/kg	0.024
ERC8c	EUSES		STP	Predicted exposure concentration	0.000052mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation	0.024 mg/m <sup>3</sup>	< 0.01

			systemic exposure		
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099 10/1/202
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.329
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/L	0.056
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/L	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/L	0.658
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.137 mg/kg	0.329
PROC10	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.0823 mg/kg	0.2
PROC11	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.0092 mg/m <sup>3</sup>	0.06
PROC11	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC11	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.214 mg/kg	0.78

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

102/202

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES14, Photo-chemicals, Consumer use

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Main User Groups : : Consumer uses: Private households (= general public = consumers)

Sectors of end-use : : Private households (=general public = consumers)

Chemical product category : **PC30:** Photo-chemicals

Article categories : **AC7:** Metal articles  
**AC8:** Paper articles  
**AC13:** Plastic articles

Environmental Release Categories : **ERC8a:** Wide dispersive indoor use of processing aids in open systems

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#### 2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

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##### Amount used

Annual amount for wide disperse uses : 15000 kg

Daily amount per site : < 0.008 kg

##### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m3/d

**Other given operational conditions affecting environmental exposure**

Intermittent use/release

103/202

Number of emission days per year : 200  
Emission or Release Factor: Air : 10 %  
Emission or Release Factor: Water : 10 %  
Emission or Release Factor: Soil : 0 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment : 2,000 m3/d  
plant effluent  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : Acclimated biological treatment  
Disposal methods : Disposed off through appropriate waste disposal carriers/authorities. (Effectiveness (of a measure): 90 %)  
Waste treatment : Disposed off through appropriate waste disposal carriers/authorities.

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**2.2 Contributing scenario controlling consumer exposure for: PC30: Photo-chemicals, AC13, AC7, AC8: Plastic articles, Metal articles, Paper articles**

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**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture

**Amount used**

Amount used per event : 0.744 kg

**Frequency and duration of use/exposure from service life**

Application duration : < 132 min  
Frequency of use : 6 days/year  
Remarks : Occasional exposure

**Human factors not influenced by risk management**

Dermal exposure : Assumes that potential dermal contact is limited to hands.

**Other given operational conditions affecting consumers exposure from article service life**

Outdoor / Indoor : Indoor activities  
Room size : 20 m3

Ensure adequate ventilation., Suitable respiratory equipment:

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a	EUSES		Fresh water	Predicted exposure concentration	0.0002348mg/L	0.758
ERC8a	EUSES		Marine water	Predicted exposure concentration	0.000022mg/L	0.71
ERC8a	EUSES		Fresh water sediment	Predicted exposure concentration	0.09mg/L	0.485
ERC8a	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/L	0.455
ERC8a	EUSES		Soil	Predicted exposure concentration	0.097mg/kg	0.039
ERC8a	EUSES		STP	Predicted exposure concentration	0.0002575mg/L	< 0.01

#### Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC30	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC30	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
PC30	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.44

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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## 1. Short title of Exposure Scenario: ES15, Polymer preparations and compounds, Extrusion and masterbatching, Industrial use

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105/202

Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU12:</b> Manufacture of plastics products, including compounding and conversion
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds
Process categories	: <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC14:</b> Production of preparations or articles by tableting, compression, extrusion, pelletisation <b>PROC21:</b> Low energy manipulation of substances bound in materials and/ or articles <b>PROC24:</b> High (mechanical) energy work-up of substances bound in materials and/ or articles
Environmental Release Categories	: <b>ERC6d:</b> Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

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### 2.1 Contributing scenario controlling environmental exposure for: ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

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#### Amount used

Daily amount per site : 56 kg

Annual amount per site : 11100 kg

106/202

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 0 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent exposure

Number of emission days per year : 200

Emission or Release Factor: Air : 35 %

Emission or Release Factor: Water : 0.005 %

Emission or Release Factor: Soil : 0.0005 %

Remarks : Formulation in materials

### Technical conditions and measures / Organizational measures

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)

Water : Maximize waste water reuse., Biological waste water treatment plant

Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant

Flow rate of sewage treatment plant effluent : 0 m3/d

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : Do not dispose of waste into sewer., Acclimated biological treatment

Disposal methods : Residues which cannot be recycled are disposed off as chemical waste., Disposed off through appropriate waste disposal carriers/authorities.

Waste treatment : Disposed off through appropriate waste disposal carriers/authorities., Residues which cannot be recycled are disposed off as chemical waste.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

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Activity : Application in a closed system

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

107/202

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)

---

Activity : Mixing

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

108/202

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.5 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Loading of application equipment (liquid products) - transfer of material from one container to another, Filling

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

109/202

### Frequency and duration of use

Application duration : < 480 min  
Remarks : Occasional exposure

### Human factors not influenced by risk management

Dermal exposure : 960 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Handle substance within a predominantly closed system provided with extract ventilation., Clear transfer lines prior to de-coupling., Use dedicated equipment., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Safety glasses with side-shields conforming to EN166

## **2.6 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

Activity : Filling

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm2)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

110/202

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.7 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Use suitable eye protection.

## **2.8 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles**

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

111/202

### Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Use suitable eye protection.

## **2.9 Contributing scenario controlling worker exposure for: PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles**

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Activity : Cutting and shaving

### Product characteristics

Physical Form (at time of use) : Solid  
Remarks : During use, dust may be formed.  
Physical Form (at time of use) : During use, dust may be formed.

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented.

### Technical conditions and measures

Ensure that enough fresh air is supplied to dilute and remove dusts, fumes or vapours. Between 5 and 15 air changes per hour are recommended, with a through draught., Provide for appropriate exhaust ventilation and dust collection at machinery.

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

Ensure operatives are trained to minimise exposures., Ensure the ventilation system is regularly maintained and tested., Clear up spills immediately and dispose of waste safely., Automate activity where possible.

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

Respirator with a dust filter, Breathing apparatus only if aerosol or dust is formed. Boots, Protective suit, Wear protective gloves. Use suitable eye protection.

### **Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed., Users are advised to consider national Occupational Exposure Limits or other equivalent values.,

Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m<sup>3</sup> - total dust, 5 mg/m<sup>3</sup> - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m<sup>3</sup> - respirable particles, 10 mg/m<sup>3</sup> - inhalable particles.

1127202

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC6d	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.675
ERC6d	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.627
ERC6d	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC6d	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC6d	EUSES		Soil	Predicted exposure concentration	1.215mg/kg dry weight (d.w.)	0.486
ERC6d	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01

PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099 113/202
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.012 mg/m <sup>3</sup>	0.084
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.0169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC14	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.0169
PROC14	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC14	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.206 mg/kg	0.494
PROC21	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.095 mg/m <sup>3</sup>	0.656
PROC21	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.095 mg/m <sup>3</sup>	< 0.01
PROC21	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.34 mg/kg	0.082

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES16, Polymer preparations and compounds, Industrial use

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Main User Groups

: : Industrial uses: Uses of substances as such or in prepara-

Sectors of end-use : **SU12:** Manufacture of plastics products, including compound-  
ing and conversion

Chemical product category : **PC32:** Polymer preparations and compounds

Process categories : **PROC1:** Use in closed process, no likelihood of exposure  
**PROC3:** Use in closed batch process (synthesis or formula-  
tion)  
**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  
**PROC8b:** Transfer of substance or preparation (charging/  
discharging) from/ to vessels/ large containers at dedicated  
facilities  
**PROC9:** Transfer of substance or preparation into small con-  
tainers (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 tableting,  
compression, extrusion, pelletisation  
**PROC21:** Low energy manipulation of substances bound in  
materials and/ or articles  
**PROC24:** High (mechanical) energy work-up of substances  
bound in materials and/ or articles

Environmental Release Categories : **ERC5:** Industrial use resulting in inclusion into or onto a matrix

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## 2.1 Contributing scenario controlling environmental exposure for: **ERC5: Industrial use resulting in inclusion into or onto a matrix**

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### Amount used

Daily amount per site : 56 kg  
Annual amount per site : 11100 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 0 m3/d

115/202

**Other given operational conditions affecting environmental exposure**

Intermittent use/release

Number of emission days per year : 200  
Emission or Release Factor: Air : 1 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 1 %

**Technical conditions and measures / Organizational measures**

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)  
Water : Maximize waste water reuse., Biological waste water treatment plant (Effectiveness (of a measure): > 90 %)  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases., The substance is not released during its life cycle.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment plant effluent : 0 m3/d  
Effectiveness (of a measure) : > 90 %

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : Acclimated biological treatment  
Disposal methods : Can be incinerated, when in compliance with local regulations.  
Waste treatment : Can be incinerated, when in compliance with local regulations.

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**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure**

---

Activity : Formulation

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 240 cm3

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Handle substance 116/202 within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

---

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

---

Activity : Application in a closed system, Formulation

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

117/202

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.5 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

---

Activity : Mixing

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

**Conditions and measures related to personal protection, hygiene and health evaluation** 118/202

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.6 Contributing scenario controlling worker exposure for: PROC6: Calendering operations**

---

**Product characteristics**

Physical Form (at time of use) : Liquid mixture

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.7 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

---

Activity : Spraying

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

119/202

## Technical conditions and measures

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %

Use suitable eye protection. **Additional good practice advice beyond the REACH Chemical**

## Safety Assessment

Additional good practice advice

: Ensure that direction of application is only horizontal or downward.

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## 2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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Activity

: with sample collection, Filling, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

## Product characteristics

Physical Form (at time of use)

: Liquid mixture

Process Temperature

: < 40 °C

## Frequency and duration of use

Application duration

: < 480 min

## Human factors not influenced by risk management

Dermal exposure

: 960 cm<sup>3</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training<sup>120/202</sup>  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

---

Activity : Filling

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Transfer via enclosed lines., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures., Automate activity where possible.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.10 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : Manual brush, roller, spreader application of coatings - indoor,  
Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

121/202

### **Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.11 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring**

---

Activity : Dyes, Dipping, Immersion operations

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

122/202

Use suitable eye protection.

## **2.12 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

---

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## **2.13 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles**

---

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

## Technical conditions and measures

123/202

Handle substance within a closed system., Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 2.14 Contributing scenario controlling worker exposure for: PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles

---

Activity : Cutting and shaving

### Product characteristics

Physical Form (at time of use) : Solid  
Remarks : During use, dust may be formed.  
Physical Form (at time of use) : During use, dust may be formed.

### Other operational conditions affecting workers exposure

Remarks : Assumes a good basic standard of occupational hygiene is implemented.

## Technical conditions and measures

Ensure that enough fresh air is supplied to dilute and remove dusts, fumes or vapours. Between 5 and 15 air changes per hour are recommended, with a through draught., Provide for appropriate exhaust ventilation and dust collection at machinery.

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

Ensure operatives are trained to minimise exposures., Ensure the ventilation system is regularly maintained and tested., Clear up spills immediately and dispose of waste safely., Automate activity where possible.

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

Respirator with a dust filter, Breathing apparatus only if aerosol or dust is formed. Boots, Protective suit, Wear protective gloves. Use suitable eye protection.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed., Users are advised to consider national Occupational Exposure Limits or other equivalent values., Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m<sup>3</sup> - total dust, 5 mg/m<sup>3</sup> - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m<sup>3</sup> - respirable particles, 10 mg/m<sup>3</sup> - inhalable particles.

**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC5	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.675
ERC5	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.627
ERC5	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC5	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC5	EUSES		Soil	Predicted exposure concentration	0.084mg/kg	0.034
ERC5	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

**Workers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.02 mg/kg	0.049
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.05
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation	0.024 mg/m <sup>3</sup>	0.169

			systemic exposure		
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01 123/202
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC6	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC6	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC6	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.082 mg/kg	0.198
PROC7	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.0031 mg/m <sup>3</sup>	0.02
PROC7	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.0031 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.012 mg/m <sup>3</sup>	0.084
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC10	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.0823 mg/kg	0.2
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC14	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC14	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC14	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.206 mg/kg	0.494
PROC21	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.095 mg/m <sup>3</sup>	0.656
PROC21	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.095 mg/m <sup>3</sup>	< 0.01

PROC21	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.34 mg/kg	0.082
126/202					

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

1. Short title of Exposure Scenario: ES17, Polymer preparations and compounds, Fire retardant, Professional use

- Main User Groups

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

Sectors of end-use

: **SU12:** Manufacture of plastics products, including compound-ing and conversion

Chemical product category

: **PC32:** Polymer preparations and compounds

Process categories

: **PROC1:** Use in closed process, no likelihood of exposure

Environmental Release Categories

: **ERC9a:** Wide dispersive indoor use of substances in closed systems  
**ERC9b:** Wide dispersive outdoor use of substances in closed systems

2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

Amount used

Daily amount per site : 0.05 kg  
Annual amount for wide disperse uses : 2000 kg

127/202

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m3/d

### Other given operational conditions affecting environmental exposure

Number of emission days per year : 200  
Emission or Release Factor: Air : 1 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 1 %

### Technical conditions and measures / Organizational measures

Remarks : The substance is not released during its life cycle., The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m3/d  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

### Conditions and measures related to external treatment of waste for disposal

Disposal methods : Can be landfilled, when in compliance with local regulations.  
Remarks : No special precautions required.  
Waste treatment : Can be landfilled, when in compliance with local regulations.  
Waste treatment : No special precautions required.

---

## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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Activity : Use at workplace

### Product characteristics

Physical Form (at time of use) : Solid

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Covers indoor and outdoor use.

### Technical conditions and measures

No specific risk management measures required. The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

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

The substance is not released during its life cycle. **Additional good practice advice beyond the REACH Chemical Safety Assessment** 128/202

Additional good practice advice : No specific measures identified.

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

#### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC9a, 9b	EUSES		Fresh water	Predicted exposure concentration	0.0002263mg/L	0.73
ERC9a, 9b	EUSES		Marine water	Predicted exposure concentration	0.0000216mg/L	0.682
ERC9a, 9b	EUSES		Fresh water sediment	Predicted exposure concentration	0.087mg/kg dry weight (d.w.)	0.468
ERC9a, 9b	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/kg dry weight (d.w.)	0.437
ERC9a, 9b	EUSES		Soil	Predicted exposure concentration	0.054mg/kg dry weight (d.w.)	0.021
ERC9a, 9b	EUSES		STP	Predicted exposure concentration	0.0001717mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

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## 1. Short title of Exposure Scenario: ES18, Polymer preparations and compounds, Fire retardant

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Main User Groups	: : Consumer uses: Private households (= general public = consumers)
Sectors of end-use	: : Private households (=general public = consumers)
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds
Article categories	: <b>AC1:</b> Vehicles <b>AC2:</b> Machinery, mechanical appliances, electrical/ electronic articles <b>AC4:</b> Stone, plaster, cement, glass and ceramic articles <b>AC5:</b> Fabrics, textiles and apparel <b>AC6:</b> Leather articles <b>AC7:</b> Metal articles <b>AC8:</b> Paper articles <b>AC10:</b> Rubber articles <b>AC11:</b> Wood articles <b>AC13:</b> Plastic articles
Environmental Release Categories	: <b>ERC9a:</b> Wide dispersive indoor use of substances in closed systems <b>ERC9b:</b> Wide dispersive outdoor use of substances in closed systems

---

### 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

---

#### Amount used

Daily amount per site	: 0.38 kg
Annual amount for wide disperse	: 76000 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

**Other given operational conditions affecting environmental exposure**

Number of emission days per year : 200  
Emission or Release Factor: Air : 0 %  
Emission or Release Factor: Water : 0.05 %  
Emission or Release Factor: Soil : 0.05 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to external treatment of waste for disposal**

Disposal methods : Can be landfilled, when in compliance with local regulations.  
Remarks : No special precautions required.  
Waste treatment : Can be landfilled, when in compliance with local regulations.  
Waste treatment : No special precautions required.

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**2.2 Contributing scenario controlling consumer exposure for: PC32: Polymer preparations and compounds**

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**Product (article) characteristic**

Physical Form (at time of use) : Solid

**Other given operational conditions affecting consumers exposure from article service life**

Outdoor / Indoor : Covers indoor and outdoor use.

**Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)**

The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

---

**3. Exposure estimation and reference to its source**

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## Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC9a, 9b	EUSES		Fresh water	Predicted exposure concentration	0.0002157mg /L	0.696
ERC9a, 9b	EUSES		Marine water	Predicted exposure concentration	0.0000201mg /L	0.648
ERC9a, 9b	EUSES		Fresh water sediment	Predicted exposure concentration	0.082mg/kg dry weight (d.w.)	0.446
ERC9a, 9b	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/kg dry weight (d.w.)	0.415
ERC9a, 9b	EUSES		Soil	Predicted exposure concentration	0.052mg/kg dry weight (d.w.)	0.021
ERC9a, 9b	EUSES		STP	Predicted exposure concentration	0.0000652mg /L	< 0.01

## Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099

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### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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### 1. Short title of Exposure Scenario: ES19, Polymer preparations and compounds, Fire retardant, Service life - consumers

Main User Groups	: : Consumer uses: Private households (= general public = consumers)
Sectors of end-use	: : Private households (=general public = consumers)
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds
Environmental Release Categories	: <b>ERC10a:</b> Wide dispersive outdoor use of long-life articles and materials with low release <b>ERC11a:</b> Wide dispersive indoor use of long-life articles and materials with low release

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## 2.1 Contributing scenario controlling environmental exposure for: ERC10a, ERC11a: Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with low release

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### Amount used

Daily amount per site	: < 0.003 kg
Annual amount for wide disperse uses	: 5200 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water	: 18,000 m3/d
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### Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air	: 0 %
Emission or Release Factor: Water	: 0.05 %
Emission or Release Factor: Soil	: 0.05 %

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

Type of Sewage Treatment Plant	: Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent	: 2,000 m3/d
Effectiveness (of a measure)	: 31.33 %
Sludge Treatment	: Controlled application of sewage sludge to agricultural soil

Conditions and measures related to external treatment of waste for disposal

Disposal methods	: Can be landfilled, when in compliance with local regulations	\$33/202
Remarks	: No special precautions required.	
Waste treatment	: Can be landfilled, when in compliance with local regulations.	
Waste treatment	: No special precautions required.	

2.2 Contributing scenario controlling consumer exposure for: PC32: Polymer preparations and compounds

Activity : In-door use

Product characteristics

Physical Form (at time of use) : Solid

Other given operational conditions affecting consumers exposure

Room size : 250 m3  
Ventilation rate per hour : 0.6

3. Exposure estimation and reference to its source

Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC 10a, 11a	EUSES		Fresh water	Predicted exposure concentration	0.0002093mg /L	0.675
ERC 10a, 11a	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC 10a, 11a	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/kg dry weight (d.w.)	0.432
ERC 10a, 11a	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC 10a, 11a	EUSES		Soil	Predicted exposure concentration	0.052mg/kg dry weight (d.w.)	0.021
ERC 10a, 11a	EUSES		STP	Predicted exposure concentration	< 0.000001mg/ L	< 0.01

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR 134/202
PROC1	ECETOC TRA	Inhalation exposure	Exposure Estimation	0.0000087 mg/m <sup>3</sup>	0.000124

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES20, Polymer preparations and compounds, Production of foam-based objects, Extrusion and masterbatching

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Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU12:</b> Manufacture of plastics products, including compounding and conversion
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds
Process categories	: <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC14:</b> Production of preparations or articles by tableting, compression, extrusion, pelletisation

**PROC15:** Use as laboratory reagent  
**PROC21:** Low energy manipulation of substances bound in materials and/ or articles  
**PROC24:** High (mechanical) energy work-up of substances bound in materials and/ or articles

Environmental Release Categories : **ERC6d:** Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers

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**2.1 Contributing scenario controlling environmental exposure for: ERC6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers**

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**Amount used**

Daily amount per site : 56 kg  
Annual amount for wide disperse uses : 11100 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 0 m3/d

**Other given operational conditions affecting environmental exposure**

Intermittent use/release  
Number of emission days per year : 200  
Emission or Release Factor: Air : 1 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 1 %

**Technical conditions and measures / Organizational measures**

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)  
Water : Maximize waste water reuse., Biological waste water treatment plant (Effectiveness (of a measure): > 90 %)  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment plant effluent : 0 m3/d  
Effectiveness (of a measure) : > 90 %

## Conditions and measures related to external treatment of waste for disposal

Waste treatment	: Acclimated biological treatment	136/202
Disposal methods	: Can be incinerated, when in compliance with local regulations.	
Waste treatment	: Can be incinerated, when in compliance with local regulations.	

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## 2.2 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

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Activity : Formulation

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

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## 2.3 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

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### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

137/202

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : Application in a closed system, Formulation

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

138/202

## **2.5 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

---

Activity : Mixing

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.6 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

## **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

139/202

## **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

## **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.7 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

## **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

## **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

## **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.8 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

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### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## **2.9 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent**

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### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

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

Ensure operatives are trained to minimise exposures.

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

Protective gloves complying with EN 374. Use suitable eye protection.

**2.11 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles**

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**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Handle substance within a closed system., Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

**2.12 Contributing scenario controlling worker exposure for: PROC24: High (mechanical) energy work-up of substances bound in materials and/ or articles**

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Activity : Cutting and shaving

**Product characteristics**

Physical Form (at time of use) : Solid  
Remarks : During use, dust may be formed.  
Physical Form (at time of use) : During use, dust may be formed.

**Other operational conditions affecting workers exposure**

Remarks : Assumes a good basic standard of occupational hygiene is implemented.

## Technical conditions and measures

142/202

Ensure that enough fresh air is supplied to dilute and remove dusts, fumes or vapours. Between 5 and 15 air changes per hour are recommended, with a through draught., Provide for appropriate exhaust ventilation and dust collection at machinery.

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

Ensure operatives are trained to minimise exposures., Ensure the ventilation system is regularly maintained and tested., Clear up spills immediately and dispose of waste safely., Automate activity where possible.

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

Respirator with a dust filter, Breathing apparatus only if aerosol or dust is formed. Boots, Protective suit, Wear protective gloves. Use suitable eye protection.

## Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Supervision in place to check that the risk management measures in place are being used correctly and operation conditions followed., Users are advised to consider national Occupational Exposure Limits or other equivalent values., Dust formation may be relevant in the processing of this product. In addition to substance-specific OELs, general limitations of concentrations of particulates in the air at workplaces have to be considered in workplace risk assessment. Relevant limits include: OSHA PEL for Particulates Not Otherwise Regulated of 15 mg/m<sup>3</sup> - total dust, 5 mg/m<sup>3</sup> - respirable fraction; and ACGIH TWA for Particles (insoluble or poorly soluble) Not Otherwise Specified of 3 mg/m<sup>3</sup> - respirable particles, 10 mg/m<sup>3</sup> - inhalable particles.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC6b	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675
ERC6b	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC6b	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC6b	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC6b	EUSES		Soil	Predicted exposure concentration	0.084mg/kg dry weight (d.w.)	0.034

ERC6b	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01 143/202
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### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.0169
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.05
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.0169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.012 mg/m <sup>3</sup>	0.084
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.049
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC14	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC14	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC14	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.206 mg/kg	0.494
PROC15	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169

PROC15	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m³	< 0.01 <small>144/202</small>
PROC15	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.204 mg/kg	0.49
PROC21	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.095 mg/m³	0.656
PROC21	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.095 mg/m³	< 0.01
PROC21	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.34 mg/kg	0.082

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES21, Polymer preparations and compounds, Production of foam-based objects, Industrial use

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Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU12:</b> Manufacture of plastics products, including compounding and conversion
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC3:</b> Use in closed batch process (synthesis or formulation) <b>PROC4:</b> Use in batch and other process (synthesis) where opportunity for exposure arises <b>PROC5:</b> Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact) <b>PROC6:</b> Calendering operations <b>PROC7:</b> Industrial spraying <b>PROC8b:</b> 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 tableting, compression, extrusion, pelletisation

**PROC21:** Low energy manipulation of substances bound in materials and/ or articles

**PROC24:** High (mechanical) energy work-up of substances bound in materials and/ or articles

145/202

Environmental Release Categories : **ERC5:** Industrial use resulting in inclusion into or onto a matrix

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## 2.1 Contributing scenario controlling environmental exposure for: **ERC5: Industrial use resulting in inclusion into or onto a matrix**

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### Amount used

Daily amount per site : 56 kg  
Annual amount per site : 11100 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 0 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Number of emission days per year : 200  
Emission or Release Factor: Air : 1 %  
Emission or Release Factor: Water : 1 %  
Emission or Release Factor: Soil : 1 %

### Technical conditions and measures / Organizational measures

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)  
Water : Maximize waste water reuse., Biological waste water treatment plant (Effectiveness (of a measure): > 90 %)  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases., The substance is not released during its life cycle.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment : 0 m3/d

plant effluent  
Effectiveness (of a measure) : > 90 %

146/202

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : Acclimated biological treatment  
Disposal methods : Can be incinerated, when in compliance with local regulations.  
Waste treatment : Can be incinerated, when in compliance with local regulations.

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## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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Activity : Formulation

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

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

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC3: Use in closed batch process (synthesis or formulation)

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### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

147/202

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises**

---

Activity : Application in a closed system, Formulation

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.5 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/ or significant contact)**

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Activity : Mixing

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## **2.6 Contributing scenario controlling worker exposure for: PROC6: Calendering operations**

---

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>2</sup>

### **Other operational conditions affecting workers exposure**

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.7 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

---

Activity : Spraying

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.**Additional good practice advice beyond the REACH Chemical**

**Safety Assessment**

Additional good practice advice : Ensure that direction of application is only horizontal or downward.

---

## 2.8 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

---

Activity : with sample collection, Filling, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.9 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

---

Activity : Filling

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

## Other operational conditions affecting workers exposure

151/202

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Transfer via enclosed lines., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures., Automate activity where possible.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.10 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : Manual brush, roller, spreader application of coatings - indoor,  
Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 1500cm<sup>2</sup>

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. 152/202  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.11 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring**

---

Activity : Dyes, Dipping, Immersion operations

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.12 Contributing scenario controlling worker exposure for: PROC14: Production of preparations or articles by tableting, compression, extrusion, pelletisation**

---

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

## Other operational conditions affecting workers exposure

153/202

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 2.13 Contributing scenario controlling worker exposure for: PROC21: Low energy manipulation of substances bound in materials and/ or articles

---

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

Handle substance within a closed system., Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour).

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
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ERC5	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675 154/202
ERC5	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC5	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC5	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC5	EUSES		Soil	Predicted exposure concentration	0.084mg/kg	0.034
ERC5	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.02 mg/kg	0.049
PROC3	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC3	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC3	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.05
PROC4	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC4	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC4	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC5	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC5	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC5	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC6	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC6	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC6	ECETOC TRA	Dermal exposure	Chronic dermal	0.082 mg/kg	0.198

			systemic exposure		
PROC7	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.0031 mg/m <sup>3</sup>	0.02
PROC7	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.0031 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.012 mg/m <sup>3</sup>	0.084
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.012 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.021 mg/kg	0.049
PROC10	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.001 mg/m <sup>3</sup>	0.07
PROC10	ART	Inhalation exposure	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.0823 mg/kg	0.2
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099
PROC14	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC14	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC14	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.206 mg/kg	0.494
PROC21	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.095 mg/m <sup>3</sup>	0.656
PROC21	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.095 mg/m <sup>3</sup>	< 0.01
PROC21	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.34 mg/kg	0.082

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

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## 1. Short title of Exposure Scenario: ES22, Production of foam-based objects, Professional use

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Main User Groups	: : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	: <b>SU12:</b> Manufacture of plastics products, including compound- ing and conversion
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure
Environmental Release Categories	: <b>ERC9a:</b> Wide dispersive indoor use of substances in closed systems <b>ERC9b:</b> Wide dispersive outdoor use of substances in closed systems

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### 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

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#### Amount used

Daily amount per site : < 0.002 kg

#### Environment factors not influenced by risk management

Flow rate of receiving surface wa- : 18,000 m3/d  
ter

#### Other given operational conditions affecting environmental exposure

Emission or Release Factor: Air : 0 %  
Emission or Release Factor: Water : 0.05 %  
Emission or Release Factor: Soil : 0.05 %

Technical conditions and measures / Organizational measures

Remarks : Site should have a spill plan to ensure that adequate safe-157/202 guards are in place to minimize the impact of episodic releases.

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m3/d  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

Conditions and measures related to external treatment of waste for disposal

Disposal methods : Can be landfilled, when in compliance with local regulations.  
Waste treatment : Can be landfilled, when in compliance with local regulations.

Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Handle in accordance with good industrial hygiene and safety practice., Provide adequate information, instruction and training for operators.

2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

Activity : Use at workplace

Product characteristics

Physical Form (at time of use) : Solid

Other operational conditions affecting workers exposure

Outdoor / Indoor : Covers indoor and outdoor use.

Technical conditions and measures

No specific risk management measures required. The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

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

The substance is not released during its life cycle.  
Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : No specific measures identified.

3. Exposure estimation and reference to its source

Environment

Contributing	Exposure Assessment	Specific	Compartment	Value type	Level of Ex-	RCR
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Scenario	Method	conditions			posure	
ERC9a, 9b	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.67502
ERC9a, 9b	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.627
ERC9a, 9b	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/L	0.432
ERC9a, 9b	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/L	0.402
ERC9a, 9b	EUSES		Soil	Predicted exposure concentration	0.051mg/L	0.02
ERC9a, 9b	EUSES		STP	Predicted exposure concentration	< 0.0000002mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

---

#### 1. Short title of Exposure Scenario: ES23, Fire retardant, Production of foam-based objects, Consumer use

---

Main User Groups

: : Consumer uses: Private households (= general public = consumers)

Sectors of end-use	: : Consumer uses: Private households (= general public = consumers)
Chemical product category	: <b>PC12:</b> Fertilizers <b>PC32:</b> Polymer preparations and compounds
Article categories	: <b>AC1:</b> Vehicles <b>AC2:</b> Machinery, mechanical appliances, electrical/ electronic articles <b>AC4:</b> Stone, plaster, cement, glass and ceramic articles <b>AC5:</b> Fabrics, textiles and apparel <b>AC6:</b> Leather articles <b>AC7:</b> Metal articles <b>AC8:</b> Paper articles <b>AC10:</b> Rubber articles <b>AC11:</b> Wood articles <b>AC13:</b> Plastic articles
Environmental Release Categories	: <b>ERC9a:</b> Wide dispersive indoor use of substances in closed systems <b>ERC9b:</b> Wide dispersive outdoor use of substances in closed systems

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**2.1 Contributing scenario controlling environmental exposure for: ERC2, ERC3, ERC5, ERC6d, ERC8c, ERC8f, ERC10a, ERC11a, ERC12a: Formulation of preparations, Formulation in materials, Industrial use resulting in inclusion into or onto a matrix, Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers, Wide dispersive indoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use resulting in inclusion into or onto a matrix, Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with low release, Industrial processing of articles with abrasive techniques (low release)**

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#### **Amount used**

Daily amount per site	: 0.38 kg
Annual amount for wide disperse uses	: 76000 kg

#### **Environment factors not influenced by risk management**

Flow rate of receiving surface wa-	: 18,000 m3/d
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**Other given operational conditions affecting environmental exposure**

Number of emission days per year : 200  
 Emission or Release Factor: Air : 0 %  
 Emission or Release Factor: Water : 0.05 %  
 Emission or Release Factor: Soil : 0.05 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment : 2,000 m3/d  
 plant effluent  
 Effectiveness (of a measure) : 31.33 %  
 Sludge Treatment : Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to external treatment of waste for disposal**

Disposal methods : Can be landfilled, when in compliance with local regulations.  
 Disposal methods : Can be landfilled, when in compliance with local regulations.  
 Waste treatment : Can be landfilled, when in compliance with local regulations.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Handle in accordance with good industrial hygiene and safety practice., Provide adequate information, instruction and training for operators.

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**2.2 Contributing scenario controlling consumer exposure for: PC32: Polymer preparations and compounds**

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**Product (article) characteristic**

Physical Form (at time of use) : Solid

**Other given operational conditions affecting consumers exposure from article service life**

Outdoor / Indoor : Covers indoor and outdoor use.

**Conditions and measures related to protection of consumer (e.g. behavioural advice, personal protection and hygiene)**

The likelihood that workers or the general public or the environment are exposed to the substance under normal or reasonably foreseeable conditions of use is negligible.

**3. Exposure estimation and reference to its source**

---

**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR 161/202
ERC9a, 9b	EUSES		Fresh water	Predicted exposure concentration	0.0002157mg/L	0.696
ERC9a, 9b	EUSES		Marine water	Predicted exposure concentration	0.0000201mg/L	0.648
ERC9a, 9b	EUSES		Fresh water sediment	Predicted exposure concentration	0.082mg/L	0.446
ERC9a, 9b	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/L	0.415
ERC9a, 9b	EUSES		Soil	Predicted exposure concentration	0.052mg/L	0.021
ERC9a, 9b	EUSES		STP	Predicted exposure concentration	0.000065mg/L	< 0.01

#### Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.169
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.041 mg/kg	0.099

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES24, Fire retardant, Production of foam-based objects, Service life - consumers

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Main User Groups	: : Consumer uses: Private households (= general public = consumers)	162/202
Sectors of end-use	: : Consumer uses: Private households (= general public = consumers)	
Chemical product category	: <b>PC32:</b> Polymer preparations and compounds	
Article categories	: <b>AC1:</b> Vehicles <b>AC2:</b> Machinery, mechanical appliances, electrical/ electronic articles <b>AC4:</b> Stone, plaster, cement, glass and ceramic articles <b>AC5:</b> Fabrics, textiles and apparel <b>AC6:</b> Leather articles <b>AC7:</b> Metal articles <b>AC8:</b> Paper articles <b>AC10:</b> Rubber articles <b>AC11:</b> Wood articles <b>AC13:</b> Plastic articles	
Environmental Release Categories	: <b>ERC10a:</b> Wide dispersive outdoor use of long-life articles and materials with low release <b>ERC11a:</b> Wide dispersive indoor use of long-life articles and materials with low release	

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**2.1 Contributing scenario controlling environmental exposure for: ERC10a, ERC11a: Wide dispersive outdoor use of long-life articles and materials with low release, Wide dispersive indoor use of long-life articles and materials with low release**

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**Amount used**

Daily amount per site	: 0.38 kg
Annual amount for wide disperse uses	: 76000 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water	: 18,000 m3/d
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**Other given operational conditions affecting environmental exposure**

Number of emission days per year	: 200
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Emission or Release Factor: Air : 0 %  
Emission or Release Factor: Water : 0.05 %  
Emission or Release Factor: Soil : 0.05 %

163/202

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment : 2,000 m3/d  
plant effluent  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

### Conditions and measures related to external treatment of waste for disposal

Disposal methods : Can be landfilled, when in compliance with local regulations.  
Remarks : No special precautions required.  
Waste treatment : Can be landfilled, when in compliance with local regulations.  
Waste treatment : No special precautions required.

---

## 2.2 Contributing scenario controlling consumer exposure for: PC32: Polymer preparations and compounds

---

Activity : In-door use

### Product (article) characteristic

Physical Form (at time of use) : Solid

### Other given operational conditions affecting consumers exposure from article service life

Room size : 250 m3  
Ventilation rate per hour : 0.6

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## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC 10a, 11a	EUSES		Fresh water	Predicted exposure concentration	0.0002157mg /L	0.696
ERC 10a, 11a	EUSES		Marine water	Predicted exposure concentration	0.0000201mg /L	0.648
ERC 10a, 11a	EUSES		Fresh water sediment	Predicted exposure	0.082mg/kg dry weight	0.446

ERC 10a, 11a	EUSES		Marine sediment	concentration Predicted exposure concentration	(d.w.) 0.008mg/kg dry weight (d.w.)	0.415 <sub>184/202</sub>
ERC 10a, 11a	EUSES		Soil	Predicted exposure concentration	0.052mg/kg dry weight (d.w.)	0.021
ERC 10a, 11a	EUSES		STP	Predicted exposure concentration	0.000065mg/L	< 0.01

Consumers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Exposure Estimation	0.0000087 mg/m³	0.000124

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

1. Short title of Exposure Scenario: ES25, ATIEL ATC B [i], Industrial use, Lubricants, greases, release products, vehicles and machinery, Filling of articles/equipment

Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU17:</b> General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	: <b>PC24:</b> Lubricants, greases, release products
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC2:</b> Use in closed, continuous process with occasional controlled exposure <b>PROC8b:</b> 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) <sup>165/202</sup>

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

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## 2.1 Contributing scenario controlling environmental exposure for: **ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

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### Amount used

Daily amount per site : 2 kg  
Annual amount per site : 440 kg  
Annual amount for wide disperse uses : 44000 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 0 m<sup>3</sup>/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Number of emission days per year : 200  
Emission or Release Factor: Air : 0.00005 %  
Emission or Release Factor: Water : 0.0001 %  
Emission or Release Factor: Soil : 0 %

### Technical conditions and measures / Organizational measures

Air : Vapour recirculation (closed system), Exhaust ventilation equipped with scrubbers. (Effectiveness (of a measure): > 90 %)  
Water : Maximize waste water reuse., Biological waste water treatment plant (Effectiveness (of a measure): > 90 %)  
Soil : Do not allow contact with soil, surface or ground water. (Effectiveness (of a measure): 100 %)  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment plant effluent : 0 m<sup>3</sup>/d  
Effectiveness (of a measure) : 90 %

## Conditions and measures related to external treatment of waste for disposal

166/202

Waste treatment	: Acclimated biological treatment
Disposal methods	: Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. (Effectiveness (of a measure): > 90 %)
Waste treatment	: Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

## Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice	: Provide adequate information, instruction and training for operators.
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## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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### Product characteristics

Physical Form (at time of use)	: Liquid mixture
Process Temperature	: < 40 °C

### Frequency and duration of use

Application duration	: < 480 min
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### Human factors not influenced by risk management

Dermal exposure	: 240 cm <sup>3</sup>
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### Other operational conditions affecting workers exposure

Outdoor / Indoor	: Indoor
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### Technical conditions and measures

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

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves/ protective clothing. Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

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### Product characteristics

Physical Form (at time of use)	: Liquid mixture
Process Temperature	: < 40 °C

### Frequency and duration of use

Application duration : < 480 min

167/202

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Storage of waste prior to disposal, Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.5 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

(Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC4	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675
ERC4	EUSES	Recommended risk management measures	Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC4	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC4	EUSES		Marine sedi-	Predicted	0.007mg/kg	0.401

			ment	exposure concentration	dry weight (d.w.)	169/202
ERC4	EUSES		Soil	Predicted exposure concentration	0.051mg/kg dry weight (d.w.)	0.02
ERC4	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.02 mg/kg	0.049
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.014 mg/kg	0.033
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/L	0.563
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.137 mg/kg	0.329
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.069 mg/kg	0.165

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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# 1. Short title of Exposure Scenario: ES26, ATIEL ATC B [p], Professional use, Lubricants, greases, release products, Lubricant, Additive, Metal working fluids

170/202

Main User Groups	: : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	: <b>SU17:</b> General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	: <b>PC17:</b> Hydraulic fluids
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC20:</b> Heat and pressure transfer fluids in dispersive, professional use but closed systems
Environmental Release Categories	: <b>ERC9a:</b> Wide dispersive indoor use of substances in closed systems

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## 2.1 Contributing scenario controlling environmental exposure for: ERC9a: Wide dispersive indoor use of substances in closed systems

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### Amount used

Daily amount for wide dispersive uses : 50 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Emission or Release Factor: Air : 0.0001 %  
Emission or Release Factor: Water : 0.0005 %  
Emission or Release Factor: Soil : 0.001 %

## Technical conditions and measures / Organizational measures

Remarks : Site should have a spill plan to ensure that adequate safe-171/202 guards are in place to minimize the impact of episodic releases.

## Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
Flow rate of sewage treatment plant effluent : 2,000 m3/d  
Effectiveness (of a measure) : 31.33 %  
Sludge Treatment : Controlled application of sewage sludge to agricultural soil

## Conditions and measures related to external treatment of waste for disposal

Waste treatment : Municipal waste 'collection' system  
Disposal methods : Disposed off through appropriate waste disposal carriers/authorities.  
Waste treatment : Disposed off through appropriate waste disposal carriers/authorities.

## Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.3 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

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### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

172/202

## **2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## **2.5 Contributing scenario controlling worker exposure for: PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems**

---

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

## Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

173/202

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC9a	EUSES		Fresh water	Predicted exposure concentration	0.0002177mg/L	0.702
ERC9a	EUSES		Marine water	Predicted exposure concentration	0.0000203mg/L	0.655
ERC9a	EUSES		Fresh water sediment	Predicted exposure concentration	0.083mg/L	0.45
ERC9a	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/L	0.42
ERC9a	EUSES		Soil	Predicted exposure concentration	0.052mg/L	0.021
ERC9a	EUSES		STP	Predicted exposure concentration	0.0000858mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation	0.008 mg/m <sup>3</sup>	< 0.01

			systemic exposure		
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658 <sub>174/202</sub>
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/L	0.056
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/L	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC20	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC20	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC20	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.034 mg/kg	0.082

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

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#### 1. Short title of Exposure Scenario: ES27, Hydraulic fluids, Consumer use, Outdoor use

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Main User Groups	: : Consumer uses: Private households (= general public = consumers)
Sectors of end-use	: : Consumer uses: Private households (= general public = consumers)
Chemical product category	: <b>PC17:</b> Hydraulic fluids <b>PC24:</b> Lubricants, greases, release products
Article categories	: <b>AC2:</b> Machinery, mechanical appliances, electrical/ electronic articles
Environmental Release Categories	: <b>ERC9b:</b> Wide dispersive outdoor use of substances in closed systems

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## 2.1 Contributing scenario controlling environmental exposure for: ERC9b: Wide dispersive outdoor use of substances in closed systems

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### Amount used

Daily amount for wide dispersive uses : 5 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
 Emission or Release Factor: Air : 0.005 %  
 Emission or Release Factor: Water : 0.0005 %  
 Emission or Release Factor: Soil : 0.0001 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant  
 Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d  
 Effectiveness (of a measure) : 31.33 %  
 Sludge Treatment : Controlled application of sewage sludge to agricultural soil

### Conditions and measures related to external treatment of waste for disposal

Waste treatment : Municipal waste 'collection' system  
 Disposal methods : Disposed off through appropriate waste disposal carriers/authorities.  
 Waste treatment : Disposed off through appropriate waste disposal carriers/authorities.

### Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.2 Contributing scenario controlling consumer exposure for: PC24, PC17: Lubricants, greases, release products, Hydraulic fluids

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Activity : Storage of waste prior to disposal, Filling

### Product (article) characteristic

Physical Form (at time of use) : Liquid mixture

**Amount used**

Amount per use : 2.2 kg

176/202

**Frequency and duration of use/exposure from service life**

Application duration : 10 min

Frequency of use : 4 days/year

Remarks : Intermittent use/release, Single exposure

**Human factors not influenced by risk management**Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)**Other given operational conditions affecting consumers exposure from article service life**Room size : 34 m<sup>3</sup>**3. Exposure estimation and reference to its source**

---

**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC9b	EUSES		Fresh water	Predicted exposure concentration	0.0002101mg/L	0.678
ERC9b	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.63
ERC9b	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/L	0.434
ERC9b	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/L	0.404
ERC9b	EUSES		Soil	Predicted exposure concentration	0.051mg/L	0.02
ERC9b	EUSES		STP	Predicted exposure concentration	0.000009mg/L	< 0.01

**Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC24	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC24	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.45

PC24	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0
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177/202

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.  
 Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

#### 1. Short title of Exposure Scenario: ES28, Hydraulic fluids, Consumer use, Indoor use

Main User Groups	: : Consumer uses: Private households (= general public = consumers)
Sectors of end-use	: : Consumer uses: Private households (= general public = consumers)
Chemical product category	: <b>PC17:</b> Hydraulic fluids <b>PC24:</b> Lubricants, greases, release products
Article categories	: <b>AC2:</b> Machinery, mechanical appliances, electrical/ electronic articles
Environmental Release Categories	: <b>ERC9a:</b> Wide dispersive indoor use of substances in closed systems

#### 2.1 Contributing scenario controlling environmental exposure for: ERC9a: Wide dispersive indoor use of substances in closed systems

##### Amount used

Daily amount for wide dispersive uses : 5 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m3/d

178/202

**Other given operational conditions affecting environmental exposure**

Intermittent use/release

Emission or Release Factor: Air : 0.005 %

Emission or Release Factor: Water : 0.0005 %

Emission or Release Factor: Soil : 0.0001 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Flow rate of sewage treatment : 2,000 m3/d

plant effluent

Effectiveness (of a measure) : 31.33 %

Sludge Treatment : Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : Municipal waste 'collection' system

Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

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**2.2 Contributing scenario controlling consumer exposure for: PC24, PC17: Lubricants, greases, release products, Hydraulic fluids**

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**Product (article) characteristic**

Physical Form (at time of use) : Liquid mixture

**Amount used**

Amount per Use : 2.2 kg

**Frequency and duration of use/exposure from service life**

Application duration : 10 min

Frequency of use : 4 days/year

Remarks : Intermittent use/release, Single exposure

**Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm2)

**Other given operational conditions affecting consumers exposure from article service life**

Room size

: 34 m3

179/202

**3. Exposure estimation and reference to its source**

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**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC9a	EUSES		Fresh water	Predicted exposure concentration	0.0002101mg/L	0.678
ERC9a	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.63
ERC9a	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/L	0.434
ERC9a	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/L	0.404
ERC9a	EUSES		Soil	Predicted exposure concentration	0.051mg/L	0.02
ERC9a	EUSES		STP	Predicted exposure concentration	0.000009mg/L	< 0.01

**Consumers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PC24	ECETOC TRA	Inhalation exposure	Systemic effects	0 mg/m <sup>3</sup>	0
PC24	ECETOC TRA	Dermal exposure	Systemic effects	0.09 mg/kg	0.45
PC24	ECETOC TRA	Oral exposure	Systemic effects	0 mg/kg	0

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**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

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## 1. Short title of Exposure Scenario: ES29, ATIEL ATC C [i], Industrial use, Lubricants, greases, release products, work pieces or equipment, Treatment by dipping and pouring, Spraying, Rolling, Brushing

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Main User Groups	: : Industrial uses: Uses of substances as such or in preparations at industrial sites
Sectors of end-use	: <b>SU17:</b> General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	: <b>PC24:</b> Lubricants, greases, release products
Process categories	: <b>PROC7:</b> Industrial spraying <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC9:</b> Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>PROC10:</b> Roller application or brushing <b>PROC13:</b> Treatment of articles by dipping and pouring
Environmental Release Categories	: <b>ERC4:</b> Industrial use of processing aids in processes and products, not becoming part of articles

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### 2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

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#### Amount used

Daily amount per site	: 0.35 kg
Annual amount per site	: 70 kg
Annual amount for wide disperse uses	: 7000 kg

#### Environment factors not influenced by risk management

Flow rate of receiving surface water	: 0 m3/d
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**Other given operational conditions affecting environmental exposure**

Intermittent use/release

181/202

Number of emission days per year : 200  
Emission or Release Factor: Air : 0.00005 %  
Emission or Release Factor: Water : 0.01 %  
Emission or Release Factor: Soil : 0 %

**Technical conditions and measures / Organizational measures**

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)  
Water : Maximize waste water reuse., Biological waste water treatment plant  
Soil : Do not allow contact with soil, surface or ground water.  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

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

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Effectiveness (of a measure) : > 90 %

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : Acclimated biological treatment  
Disposal methods : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. (Effectiveness (of a measure): > 90 %)  
Waste treatment : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

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**2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying**

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Activity : Manual spray application - indoor

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 1500cm<sup>2</sup>

**Other operational conditions affecting workers exposure**

**Technical conditions and measures**

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit, Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Ensure that direction of application is only horizontal or downward.

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**2.3 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities**

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Activity : Loading of application equipment - transfer of material from one container to another - indoor, Filling

**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

183/202

## **2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities**

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Activity : Filling, Waste management: storage of waste prior to removal for off-site management, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 95 %

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.5 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)**

---

Activity : Automated process with (semi) closed systems., Filling

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

184/202

### **Human factors not influenced by risk management**

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## **2.6 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing**

---

Activity : In-door use, Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes, Wiping

### **Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### **Frequency and duration of use**

Application duration : < 480 min

### **Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

### **Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### **Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

## 2.7 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

Activity

: Dyes, Dipping, Immersion operations

### Product characteristics

Physical Form (at time of use)

: Liquid mixture

Process Temperature

: < 40 °C

### Frequency and duration of use

Application duration

: < 480 min

### Human factors not influenced by risk management

Dermal exposure

: Palms of both hands (480 cm2)

### Other operational conditions affecting workers exposure

Outdoor / Indoor

: Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 3. Exposure estimation and reference to its source

### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC4	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg /L	0.675
ERC4	EUSES		Marine water	Predicted exposure concentration	0.0000195mg /L	0.627
ERC4	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC4	EUSES		Marine sedi-	Predicted	0.007mg/kg	0.402

			ment	exposure concentration	dry weight (d.w.)	186/202
ERC4	EUSES		Soil	Predicted exposure concentration	0.051mg/kg dry weight (d.w.)	0.02
ERC4	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC7	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.0037 mg/m <sup>3</sup>	0.03
PROC7	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.0031 mg/m <sup>3</sup>	< 0.01
PROC7	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.064 mg/kg	0.154
PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.137 mg/kg	0.329
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.004 mg/L	0.028
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.004 mg/L	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.137 mg/kg	0.329
PROC9	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC9	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC9	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.069 mg/kg	0.165
PROC10	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC10	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.659
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.137 mg/kg	0.329

#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

187/202

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES30, ATIEL ATC C [p], Professional use, Lubricants, greases, release products, work pieces or equipment, Treatment by dipping and pouring, Spraying, Rolling, Brushing

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Main User Groups	: : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	: <b>SU17:</b> General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	: <b>PC25:</b> Metal working fluids
Process categories	: <b>PROC8a:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities <b>PROC10:</b> Roller application or brushing <b>PROC11:</b> Non industrial spraying <b>PROC13:</b> Treatment of articles by dipping and pouring
Environmental Release Categories	: <b>ERC8a:</b> Wide dispersive indoor use of processing aids in open systems

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#### 2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

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##### Amount used

Daily amount for wide dispersive uses : 5 kg

## Environment factors not influenced by risk management

188/202

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

## Other given operational conditions affecting environmental exposure

Intermittent use/release

Emission or Release Factor: Air : 0.0001 %

Emission or Release Factor: Water : 0.0005 %

Emission or Release Factor: Soil : 0.001 %

## Technical conditions and measures / Organizational measures

Air : Release estimates for evaporative emissions  
Water : Equipment cleaning with minimized emissions to wastewater  
Soil : Prevent leaks and prevent soil / water pollution caused by leaks., Release to soil from process

## Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d

Effectiveness (of a measure) : 31.33 %

Sludge Treatment : Controlled application of sewage sludge to agricultural soil

## Conditions and measures related to external treatment of waste for disposal

Waste treatment : Municipal waste 'collection' system  
Disposal methods : Dispose of as hazardous waste in compliance with local and national regulations.

Waste treatment : Dispose of as hazardous waste in compliance with local and national regulations.

## Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

---

## 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at non-dedicated facilities

---

Activity : Raw material assembly and charging: raw material dispensing of liquids manually from bulk storage or packaged goods - indoor, Filling

## Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

## Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm3

189/202

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

---

Activity : Manual brush, roller, spreader application of coatings - indoor

### Product characteristics

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 1500cm2

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Ensure fixed capturing hood is used., Provide extraction ventilation at points where emissions occur. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %

Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

---

Activity : Manual spray application - outdoor, Manual spray application - indoor

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 1500cm<sup>2</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

Ensure fixed capturing hood is used., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Full protective suit,  
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

### Safety Assessment

Additional good practice advice : Ensure that direction of application is only horizontal or downward.

---

## 2.5 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

---

Activity : Immersion operations, Dipping

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

## Human factors not influenced by risk management

191/202

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

## Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

## Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace.

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %

Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %

Use suitable eye protection.

## 3. Exposure estimation and reference to its source

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### Environment

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC8a	EUSES		Fresh water	Predicted exposure concentration	0.0002101mg/L	0.678
ERC8a	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.63
ERC8a	EUSES		Fresh water sediment	Predicted exposure concentration	0.08mg/L	0.434
ERC8a	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/L	0.404
ERC8a	EUSES		Soil	Predicted exposure concentration	0.054mg/kg	0.021
ERC8a	EUSES		STP	Predicted exposure concentration	0.000009mg/L	< 0.01

### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
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PROC8a	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056 192/202
PROC8a	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC8a	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC10	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.00041 mg/m <sup>3</sup>	< 0.01
PROC10	ART	Inhalation exposure	Acute inhalation systemic exposure	0.001 mg/m <sup>3</sup>	< 0.01
PROC10	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation	Chronic dermal systemic exposure	0.0823 mg/kg	0.2
PROC11	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.0092 mg/m <sup>3</sup>	0.06
PROC11	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.024 mg/m <sup>3</sup>	< 0.01
PROC11	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.214 mg/kg	0.78
PROC13	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.008 mg/m <sup>3</sup>	0.056
PROC13	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.008 mg/m <sup>3</sup>	< 0.01
PROC13	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

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#### 1. Short title of Exposure Scenario: ES31, ATIEL ATC F [i], Industrial use, Lubrication at high energy conditions and in partly open process, Metal working fluids

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Main User Groups : : Industrial uses: Uses of substances as such or in preparations at industrial sites

Sectors of end-use : **SU17:** General manufacturing, e.g. machinery, equipment,

Chemical product category : **PC25: Metal working fluids**

Process categories : **PROC1:** Use in closed process, no likelihood of exposure  
**PROC2:** Use in closed, continuous process with occasional controlled exposure  
**PROC8b:** Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities  
**PROC17:** Lubrication at high energy conditions and in partly open process

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

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## 2.1 Contributing scenario controlling environmental exposure for: **ERC4: Industrial use of processing aids in processes and products, not becoming part of articles**

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### Amount used

Daily amount per site : 500 kg  
Annual amount per site : 10000 kg

### Environment factors not influenced by risk management

Flow rate of receiving surface water : 0 m3/d

### Other given operational conditions affecting environmental exposure

Intermittent use/release  
Number of emission days per year : 20  
Emission or Release Factor: Air : 0.00005 %  
Emission or Release Factor: Water : 0.001 %  
Emission or Release Factor: Soil : 0 %

### Technical conditions and measures / Organizational measures

Air : Exhaust ventilation equipped with scrubbers., Vapour recirculation (closed system)  
Water : Maximize waste water reuse., Biological waste water treatment plant (Effectiveness (of a measure): > 90 %)  
Soil : Do not allow contact with soil, surface or ground water.  
Remarks : Site should have a spill plan to ensure that adequate safeguards are in place to minimize the impact of episodic releases.

## Conditions and measures related to municipal sewage treatment plant

194/202

Type of Sewage Treatment Plant : Onsite sewage treatment plant  
Flow rate of sewage treatment : 0 m3/d  
plant effluent  
Effectiveness (of a measure) : > 90 %

## Conditions and measures related to external treatment of waste for disposal

Waste treatment : Acclimated biological treatment  
Disposal methods : It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations., Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities. (Effectiveness (of a measure): 90 %)  
  
Waste treatment : Must be incinerated in a suitable incineration plant holding a permit delivered by the competent authorities., It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.

## Additional good practice advice beyond the REACH Chemical Safety Assessment

Additional good practice advice : Provide adequate information, instruction and training for operators.

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## 2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure

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### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 240 cm3

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

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

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC2: Use in closed, continuous process with occasional controlled exposure

195/202

Activity : Rolling, Application in a closed system

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : Palms of both hands (480 cm<sup>2</sup>)

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.  
(Effectiveness (of a measure): 95 %  
Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 480 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear suitable coveralls to prevent exposure to the skin., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**2.5 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process**

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**Product characteristics**

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 240 min

**Human factors not influenced by risk management**

Dermal exposure : 960 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Respirator with combination filter for vapour/particulate (EN 141), P2 filter (Effectiveness (of a measure): 90 %  
Wear suitable coveralls to prevent exposure to the skin., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**3. Exposure estimation and reference to its source**

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**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR 197/202
ERC4	EUSES		Fresh water	Predicted exposure concentration	0.0002092mg/L	0.675
ERC4	EUSES		Marine water	Predicted exposure concentration	0.0000195mg/L	0.627
ERC4	EUSES		Fresh water sediment	Predicted exposure concentration	0mg/kg dry weight (d.w.)	< 0.01
ERC4	EUSES		Marine sediment	Predicted exposure concentration	0.007mg/kg dry weight (d.w.)	0.402
ERC4	EUSES		Soil	Predicted exposure concentration	0.051mg/kg dry weight (d.w.)	0.021
ERC4	EUSES		STP	Predicted exposure concentration	0mg/L	< 0.01

#### Workers

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.188
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.027 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.007 mg/kg	0.016
PROC2	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/m <sup>3</sup>	0.563
PROC2	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/m <sup>3</sup>	< 0.01
PROC2	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.014 mg/kg	0.033
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.082 mg/L	0.563
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/L	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.137 mg/kg	0.329
PROC17	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.098 mg/m <sup>3</sup>	0.675
PROC17	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.653 mg/m <sup>3</sup>	< 0.01
PROC17	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.027 mg/kg	0.066

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

198/202

Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.  
Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.

1. Short title of Exposure Scenario: ES32, ATIEL ATC F [p], Professional use, Lubrication at high energy conditions and in partly open process, Metal working fluids

Main User Groups	: : Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sectors of end-use	: <b>SU17:</b> General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment
Chemical product category	: <b>PC25:</b> Metal working fluids
Process categories	: <b>PROC1:</b> Use in closed process, no likelihood of exposure <b>PROC8b:</b> Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities <b>PROC17:</b> Lubrication at high energy conditions and in partly open process
Environmental Release Categories	: <b>ERC8a:</b> Wide dispersive indoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a: Wide dispersive indoor use of processing aids in open systems

Amount used

Daily amount for wide dispersive : 50 kg

**Environment factors not influenced by risk management**

Flow rate of receiving surface water : 18,000 m<sup>3</sup>/d

**Other given operational conditions affecting environmental exposure**

Intermittent use/release

Emission or Release Factor: Air : 0.0001 %

Emission or Release Factor: Water : 0.001 %

Emission or Release Factor: Soil : 0.001 %

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

Type of Sewage Treatment Plant : Municipal sewage treatment plant

Flow rate of sewage treatment plant effluent : 2,000 m<sup>3</sup>/d

Effectiveness (of a measure) : 31.33 %

Sludge Treatment : Controlled application of sewage sludge to agricultural soil

**Conditions and measures related to external treatment of waste for disposal**

Waste treatment : Municipal waste 'collection' system

Disposal methods : Can be landfilled after chemical and physical treatment, when in compliance with local regulations.

Waste treatment : Can be landfilled after chemical and physical treatment, when in compliance with local regulations.

**Additional good practice advice beyond the REACH Chemical Safety Assessment**

Additional good practice advice : Provide adequate information, instruction and training for operators.

---

**2.2 Contributing scenario controlling worker exposure for: PROC1: Use in closed process, no likelihood of exposure**

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**Product characteristics**

Physical Form (at time of use) : Liquid mixture

Process Temperature : < 40 °C

**Frequency and duration of use**

Application duration : < 480 min

**Human factors not influenced by risk management**

Dermal exposure : 240 cm<sup>3</sup>

**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

### Technical conditions and measures

Provide a basic standard of general ventilation (1 to 3 air changes per hour)., Handle substance 200/202 within a closed system.

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

Ensure operatives are trained to minimise exposures.

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

Wear protective gloves. Use suitable eye protection.

## 2.3 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities

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Activity : Manufacturing equipment maintenance: cleaning manufacturing equipment for maintenance purposes

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : < 40 °C

### Frequency and duration of use

Application duration : < 240 min

### Human factors not influenced by risk management

Dermal exposure : 960 cm<sup>3</sup>

### Other operational conditions affecting workers exposure

Outdoor / Indoor : Indoor

### Technical conditions and measures

As a rule, at least 10 air changes per hour are recommended at the workplace., Handle substance within a predominantly closed system provided with extract ventilation.

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

Ensure operatives are trained to minimise exposures.

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

Wear suitable coveralls to prevent exposure to the skin., Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. (Effectiveness (of a measure): 90 %  
Use suitable eye protection.

## 2.4 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process

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Activity : Operation and lubrication of high energy open equipment

### Product characteristics

Physical Form (at time of use) : Liquid mixture  
Process Temperature : 15 - 25 °C

**Frequency and duration of use**

Application duration : &lt; 480 min

201/202

**Human factors not influenced by risk management**Dermal exposure : 1500cm<sup>2</sup>**Other operational conditions affecting workers exposure**

Outdoor / Indoor : Indoor

**Technical conditions and measures**

As a rule, at least 10 air changes per hour are recommended at the workplace., Ensure movable capturing hood is used., Use only in area provided with appropriate exhaust ventilation. (Effectiveness (of a measure): 90 %

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

Ensure operatives are trained to minimise exposures.

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

Powered fresh air hose breathing apparatus incorporating a hood Boots, Wear suitable coveralls to prevent exposure to the skin., Wear chemically resistant gloves (tested to EN374) in combination with specific activity training. (Effectiveness (of a measure): 95 %  
Use suitable eye protection.

**3. Exposure estimation and reference to its source**

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**Environment**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Compartment	Value type	Level of Exposure	RCR
ERC9a	EUSES		Fresh water	Predicted exposure concentration	0.0002263mg /L	0.73
ERC9a	EUSES		Marine water	Predicted exposure concentration	0.0000212mg /L	0.682
ERC9a	EUSES		Fresh water sediment	Predicted exposure concentration	0.087mg/kg dry weight (d.w.)	0.468
ERC9a	EUSES		Marine sediment	Predicted exposure concentration	0.008mg/kg dry weight (d.w.)	0.437
ERC9a	EUSES		Soil	Predicted exposure concentration	0.054mg/kg dry weight (d.w.)	0.021
ERC9a	EUSES		STP	Predicted exposure concentration	0.0001717mg /L	< 0.01

**Workers**

Contributing Scenario	Exposure Assessment Method	Specific conditions	Value type	Level of Exposure	RCR 202/202
PROC1	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.024 mg/m <sup>3</sup>	0.188
PROC1	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.027 mg/m <sup>3</sup>	< 0.01
PROC1	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.007 mg/kg	0.016
PROC8b	ECETOC TRA	Inhalation exposure	Chronic inhalation systemic exposure	0.049 mg/L	0.338
PROC8b	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.082 mg/L	< 0.01
PROC8b	ECETOC TRA	Dermal exposure	Chronic dermal systemic exposure	0.274 mg/kg	0.658
PROC17	ART	Inhalation exposure	Chronic inhalation systemic exposure	0.062 mg/m <sup>3</sup>	0.42
PROC17	ECETOC TRA	Inhalation exposure	Acute inhalation systemic exposure	0.062 mg/m <sup>3</sup>	< 0.01
PROC17	ECETOC TRA	Dermal exposure, With Local Exhaust Ventilation, Use of appropriate dermal protection	Chronic dermal systemic exposure	0.0549 mg/kg	0.13

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#### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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Where other RMM/OC are adopted, then users should ensure that risks are managed to at least equivalent levels.

Estimated workplace exposures are not expected to exceed DNELs when the identified risk management measures are adopted.