Eni Aster MM/E

Safety Data Sheet

According to Regulation (EU) No. 830/2015

Revision date: 12/12/2019 Supersedes: 17/04/2018 Version: 5.0

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

1.1. Product identifier

Product form	:	Mixture
Trade name	:	Eni Aster MM/E
Product code	:	7356
Type of product	:	Lubricants
Formula	:	0212-2019
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
Use of the substance/mixture	:	Metalworking fluid Metalworking lubricant Functional fluids ---- Do not use the product for any purposes that have not been advised by the manufacturer.
Function or use category	:	Lubricants and additives

1.2.2. Uses advised against

No additional information available

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

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

Aspiration into lungs can cause a chemical pneumonia. Contact with eyes may cause temporary reddening and irritation. For specific information about the toxicological/ecotoxicological properties and classification of this product, see Sect. 11 and/or Sect. 12.

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS08

CLP Signal word : Danger

Hazardous ingredients and/or with relevant occupational exposure limits : Distillates (petroleum), solvent-refined light paraffinic

Hazard statements (CLP) : H304 - May be fatal if swallowed and enters airways.

Precautionary statements (CLP) : P301+P310 - IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331 - Do NOT induce vomiting.
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. If the product is handled or used at high temperature, contact with hot product or vapours may cause burns. 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 prolunged 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 H2S. See Heading 16.

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	>= 95	Asp. Tox. 1, H304
Mineral base oil, severely refined (For identification of the substance, see note [*] , see note [***])		0,1 - 0,9	Asp. Tox. 1, H304

Notes : [*] Note: this product may be formulated with one or more of the following severely refined mineral base oils (not classified as hazardous):
CAS 64742-54-7/EC 265-157-1/REACH Reg. # 01-2119484627-25-xxxx; CAS 64742-65-0/EC 265-169-7/REACH Reg. # 01-2119471299-27-xxxx; CAS 64742-70-7/EC 265-174-4/REACH Reg. # 01-2119487080-42-xxxx.
All these substances have a value < 3 % wt of DMSO extract, according to IP 346/92 (Nota L - Annex VI Reg (CE) 1272/2008, # 1.1.3)

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

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 inconscious, 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. In case of ingestion, always assume that aspiration has occurred. Immediately consult a doctor/medical service.

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 hot product or vapours may cause burns. Contact with eyes may cause temporary reddening and irritation.

Symptoms/effects after ingestion : Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis. The effects may be delayed.

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 H2S (hydrogen sulphide). The casualty should be sent immediately 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 classied 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/m³ of air.

Hazardous decomposition products in case of fire : Incomplete combustion is likely to give rise to a complex mixture of airborne solid and liquid particulates, gases, including carbon monoxide, NOx, H2S and SOx (harmful/toxic gases). Oxygenated compounds (aldehydes, etc.). NaOx.

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.

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 H2S), 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. Take off immediately all contaminated clothing and wash it before reuse. Contaminated materials should not be allowed to accumulate in the workplaces and should never be kept inside the pockets. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

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/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Belgium	Limit value (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Denmark	Grænseværdi (langvarig) (mg/m³)	1 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Denmark	Grænseværdi (kortvarig) (mg/m³)	2 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Hungary	AK-érték	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Netherlands	MAC TGG 8h (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Spain	VLA-ED (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Spain	VLA-EC (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Sweden	Nivågränsvärde (NVG) (mg/m3)	1 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Sweden	Kortidsvärde (KTV) (mg/m3)	3 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
United Kingdom	WEL TWA (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
United Kingdom	WEL STEL (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Canada (Quebec)	VECD (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Canada (Quebec)	VEMP (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - ACGIH	ACGIH TLV®-TWA (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - ACGIH	ACGIH TLV®-STEL (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - NIOSH	NIOSH REL (STEL) (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)

Mineral base oil, severely refined		
Austria	MAK (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Belgium	Limit value (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Denmark	Grænseværdi (langvarig) (mg/m³)	1 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Denmark	Grænseværdi (kortvarig) (mg/m³)	2 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Hungary	AK-érték	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Netherlands	MAC TGG 8h (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Spain	VLA-ED (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Spain	VLA-EC (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Sweden	Nivågränsvärde (NVG) (mg/m3)	1 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Sweden	Kortidsvärde (KTV) (mg/m3)	3 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
United Kingdom	WEL TWA (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
United Kingdom	WEL STEL (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Canada (Quebec)	VECD (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
Canada (Quebec)	VEMP (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - ACGIH	ACGIH TLV®-TWA (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - ACGIH	ACGIH TLV®-STEL (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - NIOSH	NIOSH REL (TWA) (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - NIOSH	NIOSH REL (STEL) (mg/m³)	10 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)
USA - OSHA	OSHA PEL (TWA) (mg/m³)	5 mg/m³ (Mineral base oil mist, severely refined, DMSO extract <3% m/m)

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 Aster MM/E	
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, inhalation	5,4 mg/m³ (Aerosol)
PNEC (additional information)	
Additional information	Not derived - Not classified as hazardous for environment

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):

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

Hand protection:

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: in presence of oil mists and if the product is handled without adequate containment means: use full or half-face masks with filter for mists/aerosols (P). In case there is a significant presence of vapours (e.g. through handling at high temperature), use full or half-face masks with a filter for organic vapours (A), and H2S (B) where applicable. (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 H2S) 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	:	Not applicable
Relative evaporation rate (butylacetate=1)	:	Negligible.
Melting point	:	-15 °C (pour point) (ASTM D 97)
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	195 °C (ASTM D 92)
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	No data available
Relative vapour density at 20 °C	:	No data available
Relative density	:	No data available
Density	:	850 kg/m³ (15 °C) (ASTM D 4052)
Solubility	:	Water: Immiscible and insoluble
Log Pow	:	Not applicable for mixtures
Viscosity, kinematic	:	14 mm²/s (40 °C) (ASTM D 445)
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

Additional information : No data available

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.

10.5. Incompatible materials

Strong oxidants.

10.6. Hazardous decomposition products

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 H2S. 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)

Mineral base oil, severely refined	
LD50 oral rat	≥ 5000 mg/kg bodyweight (OECD 401)
LD50 dermal rat	≥ 5000 mg/kg bodyweight (OECD 402)
LC50 inhalation rat (mg/l)	≥ 5 mg/l/4h (OECD 403)

Skin corrosion/irritation	:	Not classified (Based on available data, the classification criteria are not met) pH: Not applicable
Additional information	:	(according to composition)
Serious eye damage/irritation	:	Not classified (Based on available data, the classification criteria are not met) pH: Not applicable
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)
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. All the mineral base oils contained in this product have a value < 3 % wt of DMSO extract, according to IP 346/92 (Nota L - Annex VI Reg (CE) 1272/2008, # 1.1.3) No carcinogenic effect
Reproductive toxicity	:	Not classified (Based on available data, the classification criteria are not met)
Additional information	:	(according to composition)
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)

Mineral base oil, severely refined	
LOAEL (oral, rat, 90 days)	125 mg/kg bodyweight/day (OECD TG 408)

Aspiration hazard	:	May be fatal if swallowed and enters airways.
Additional information	:	(according to composition) For all low-viscosity petroleum products 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 inflamation of the lung tissues (chemical pneumonia). This is a serious condition requiring medical treatment. Aspiration into lungs can cause a chemical pneumonia

Eni Aster MM/E	
Viscosity, kinematic	14 mm²/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.
Other information	:	None.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general	:	The product is not considered harmful to aquatic organisms nor to cause long-term adverse effects in the environment. An uncontrolled release to the environment may nevertheless 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)
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) : Not classified (Based on available data, the classification criteria are not met)

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)

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

12.2. Persistence and degradability

Eni Aster MM/E	
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.

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

Mineral base oil, severely refined	
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.

12.3. Bioaccumulative potential

Eni Aster MM/E	
Log Pow	Not applicable for mixtures
Bioaccumulative potential	Not established.

Distillates (petroleum), solvent-refined light paraffinic (64741-89-5)	
Bioaccumulative potential	The test methods for this endpoint are not applicable to UVCB substances.

12.4. Mobility in soil

Eni Aster MM/E	
Ecology - soil	No data available.

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

Eni Aster MM/E	
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)

Component	
Mineral base oil, severely refined ()	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)
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.

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
14.1. UN number				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.2. UN proper shipping name				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.3. Transport hazard class(es)				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.4. Packing group				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
14.5. Environmental hazards				
Not regulated	Not regulated	Not regulated	Not regulated	Not regulated
None.				

14.6. Special precautions for user

- Overland transport

Not regulated

- Transport by sea

Not regulated

- Air transport

Not regulated

- Inland waterway transport

Not regulated

- Rail transport

Not regulated

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

IBC code : Not applicable.

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 Aster MM/E - Mineral base oil, severely refined - Distillates (petroleum), solvent-refined light paraffinic

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

Contains no REACH Annex XIV substances

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 professionelles (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) 1, Slightly hazardous to water (Classification according to AwSV, Annex 1)
WGK remark	:	Classification based on the components in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS)
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

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

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:
Distillates (petroleum), solvent-refined light paraffinic

SECTION 16: Other information

Indication of changes:

Section	Changed item	Change	Notes
1.1	Formula	Modified	
2.1	Adverse physicochemical, human health and environmental effects	Modified	
2.3	Other hazards not contributing to the classification	Modified	
3	Composition/information on ingredients	Modified	
3.2	Comments	Added	
3.2	Notes	Added	
4.1	First-aid measures after ingestion	Modified	
4.1	First-aid measures after skin contact	Modified	
4.1	First-aid measures after eye contact	Modified	
4.2	Symptoms / injuries (general indications)	Removed	
4.2	Symptoms/effects after ingestion	Modified	
4.2	Symptoms/effects after eye contact	Modified	
5.2	Hazardous decomposition products in case of fire	Added	
5.3	Firefighting instructions	Modified	
7.1	Precautions for safe handling	Modified	
7.1	Hygiene measures	Modified	
8.1	DNEL/DMEL and PNEC values	Added	
8.2	Appropriate engineering controls	Modified	
10.4	Conditions to avoid	Modified	
11.1	Additional information	Modified	
11.1	Additional information	Modified	
11.1	Potential adverse human health effects and symptoms	Modified	
12.1	Ecology - general	Modified	
14.6	Special transport precautions	Removed	
15.1	Storage class (LGK) (D)	Modified	
15.1	Other information, restrictions and prohibition regulations	Added	
15.1	Employment restrictions	Added	
15.1	Other information, restriction and prohibition regulations	Added	
15.1	REACH Annex XVII	Modified	
16	Abbreviations and acronyms	Modified	
16	Indication of changes	Added	

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
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 prolunged 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 H2S. 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 H2S 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 H2S (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.

Full text of H- and EUH-statements:

Asp. Tox. 1	Aspiration hazard, Category 1
H304	May be fatal if swallowed and enters airways.

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

Asp. Tox. 1	H304	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.

8. 08: Use in Metal working fluids / rolling oils

8.1. Title section

Use in Metal working fluids / rolling oils

ES Ref.: 08	Company ES code: ENI
ES Type: Industrial	Association ref code: CONC.13.FU.7
Version: 2.0	Date of issue: 23/10/2018
Revision date: 17/05/2018	

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

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

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)

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

Exposure duration	≈ 8 h/day

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

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	
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

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	
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

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	
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)

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	
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)	

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)

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

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to (hours/event):	> 4 h/day

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)

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	
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

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours (unless stated differently)	

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

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers daily exposures up to 8 hours (unless stated differently)	

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	

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

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

Covers daily exposures up to 8 hours (unless stated differently)	

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

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

Covers exposure up to (hours/event):	> 4 h/day

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)

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

Covers daily exposures up to 8 hours (unless stated differently)	

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

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

Covers daily exposures up to 8 hours (unless stated differently)	

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

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	
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

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

Covers exposure up to (hours/event):	> 4 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	
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

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

Covers exposure up to (hours/event):	> 4 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	
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)	

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/m³	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/m³	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/m³	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/m³	0.185	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.185	

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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	0.093	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.093	

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/m³	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/m³	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

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

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/m³	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/m³	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/m³	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 (http://cefic.org/en/reach-for-industries-libraries.html).

8.4.2. Health

Guidance - Health	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. EXPOSURE SCENARIOS All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one. 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. Workers: - Do not ingest - Implement basic standard of occupation hygiene - Avoid splashes and spills - Avoid contact with contaminated objects and tools - Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed. - Training for staff on good practices - Good standard of personal hygiene

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.	

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

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

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	
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)

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	
Transfer via enclosed lines	
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 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

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 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)

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	
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

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 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

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 %
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.	
Assumes activities reflect a hot process	

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)

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	
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

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)	

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

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, ESVOC 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	
Maximum Risk Characterization Ratios for wastewater emissions	0.14	

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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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 (http://cefic.org/en/reach-for-industries-libraries.html).

17.4.2. Health

Guidance - Health	EXPOSURE SCENARIOS All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one. 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. Workers: - Do not ingest - Implement basic standard of occupation hygiene - Avoid splashes and spills - Avoid contact with contaminated objects and tools - Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed. - Training for staff on good practices - 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

21. 21: Use in Metal working fluids / rolling oils

21.1. Title section

Use in Metal working fluids / rolling oils

ES Ref.: 21	Company ES code: ENI
ES Type: Professional	Association ref code: CONC.14.FU.7
Version: 2.0	Date of issue: 23/10/2018
Revision date: 17/05/2018	

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

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

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)

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

Exposure duration	≈ 8 h/day

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

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	
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

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.	
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)

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

Covers exposure up to (hours/event):	> 4 h/day

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

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	
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)	

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)

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	
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	
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

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	
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.	

Other conditions affecting workers exposure	
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

Amount used (or contained in articles), frequency and duration of use/exposure	
Covers exposure up to (hours/event):	< 4 h/day

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)	

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	

Other conditions affecting workers exposure

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

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

Covers exposure up to (hours/event):	> 4 h/day

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

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.	

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

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

Covers exposure up to (hours/event):	> 4 h/day

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

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

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

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 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

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

Covers daily exposures up to 8 hours (unless stated differently)	

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

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

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

Covers exposure up to (hours/event):	> 4 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)	

21.2.18. 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)	

Conditions and measures related to personal protection, hygiene and health evaluation	
Outdoor use.	
Store substance within a closed system	

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, ESVOC 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/m³	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/m³	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/m³	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/m³	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

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

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/m³	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/m³	0.37	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.37	

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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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 (http://cefic.org/en/reach-for-industries-libraries.html).

21.4.2. Health

Guidance - Health	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. EXPOSURE SCENARIOS All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one. 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. Workers: - Do not ingest - Implement basic standard of occupation hygiene - Avoid splashes and spills - Avoid contact with contaminated objects and tools - Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed. - Training for staff on good practices - Good standard of personal hygiene

32. 32: Use as Functional Fluids

32.1. Title section

Use as Functional Fluids

ES Ref.: 32	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		
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.	

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

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	
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)

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)	
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)	

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

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

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	

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)

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	
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)	

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

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, ESVOC 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/m³	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/m³	0.926	Used ECETOC TRA model.
Sum RCR - Long-term - systemic effects		0.926	

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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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/m³	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 (http://cefic.org/en/reach-for-industries-libraries.html).

32.4.2. Health

Guidance - Health	EXPOSURE SCENARIOS All exposure scenarios for this substance did not require a quantitative assessment of exposure, but only a qualitative one. 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. Workers: - Do not ingest - Implement basic standard of occupation hygiene - Avoid splashes and spills - Avoid contact with contaminated objects and tools - Management/supervision actions to check that the Risk Reduction Measures in place are being used correctly and Operating Conditions are followed. - Training for staff on good practices - 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