SAFETY DATA SHEET

Synfluid® PAO 2.5 cSt
Version 1.9
Revision Date 2016-05-30

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

Product information
Product Name : Synfluid® PAO 2.5 cSt
Material : 1079862, 1079691

EC-No. Registration number

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. EC-No.</th>
<th>Legal Entity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene, Dimer Hydrogenated</td>
<td>151006-61-0</td>
<td>Chevron Phillips Chemical Company LP</td>
</tr>
<tr>
<td></td>
<td>417-060-2</td>
<td>01-0000016387-64-0006</td>
</tr>
<tr>
<td></td>
<td>601-063-00-2</td>
<td></td>
</tr>
</tbody>
</table>

Relevant Identified Uses Supported: Manufacture
Distribution
Use as an intermediate
Formulation
Use in coatings – industrial
Use in coatings – professional
Use in Coatings - Consumer
Lubricants - Industrial
Lubricants - Professional
Lubricants - Consumer
Metal working fluids / rolling oils - Industrial
Metal working fluids / rolling oils – Professional
Functional Fluids - Industrial
Functional Fluids - Professional
Functional Fluids - Consumer
Use in polymer production – industrial
Other consumer uses

Company : Chevron Phillips Chemical Company LP
10001 Six Pines Drive
The Woodlands, TX 77380

Local : Chevron Phillips Chemicals International N.V.
Airport Plaza (Stockholm Building)
Leonardo Da Vinci Laan 19
1831 Diegem
Belgium
## SECTION 2: Hazards identification

**Classification of the substance or mixture**

REGULATION (EC) No 1272/2008

<table>
<thead>
<tr>
<th>Acute toxicity, Category 4</th>
<th>H332:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harmful if inhaled.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aspiration hazard, Category 1</th>
<th>H304:</th>
</tr>
</thead>
<tbody>
<tr>
<td>May be fatal if swallowed and enters airways.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chronic aquatic toxicity, Category 4</th>
<th>H413:</th>
</tr>
</thead>
<tbody>
<tr>
<td>May cause long lasting harmful effects to aquatic life.</td>
<td></td>
</tr>
</tbody>
</table>

**Label elements**

**Labeling (REGULATION (EC) No 1272/2008)**

- **Signal Word**: Danger
- **Hazard pictograms**: ![Signal Word](image)

- **Hazard Statements**:
  - H304: May be fatal if swallowed and enters airways.
  - H332: Harmful if inhaled.
  - H413: May cause long lasting harmful effects to aquatic life.

- **Precautionary Statements**:
  - **Prevention**: P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
  - P273 Avoid release to the environment.
  - Response: P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
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Version 1.9

Revised Date: 2016-05-30

P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

P331 Do NOT induce vomiting.

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

Hazardous ingredients which must be listed on the label:
- 151006-61-0 1-Dodecene, Dimer Hydrogenated

SECTION 3: Composition/information on ingredients

Synonyms: Polyalphaolefin

Molecular formula: UVCB

Mixtures

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. EC-No. Index No.</th>
<th>Classification (REGULATION (EC) No. 1272/2008)</th>
<th>Concentration [wt%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene, Dimer Hydrogenated</td>
<td>151006-61-0 417-060-2 601-063-00-2</td>
<td>Acute Tox. 4; H332 Asp. Tox. 1; H304 Aquatic Chronic 4; H413</td>
<td>100</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

General advice: Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if swallowed or vomited.

If inhaled: Consult a physician after significant exposure. If unconscious in recovery position and seek medical advice.

In case of eye contact: Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed: Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point: 186 °C (367 °F)

SDS Number: 100000013639 3/47
**Method:** Cleveland Open Cup

**Autoignition temperature:** 324 °C (615 °F)

**Unsuitable extinguishing media:** High volume water jet.

**Special protective equipment for fire-fighters:** Wear self-contained breathing apparatus for firefighting if necessary.

**Further information:** Standard procedure for chemical fires. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Fire and explosion protection:** Normal measures for preventive fire protection.

### SECTION 6: Accidental release measures

**Personal precautions:** Use personal protective equipment. Ensure adequate ventilation.

**Environmental precautions:** Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

**Methods for cleaning up:** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

### SECTION 7: Handling and storage

**Handling**

**Advice on safe handling:** Avoid formation of aerosol. Do not breathe vapors/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations.

**Advice on protection against fire and explosion:** Normal measures for preventive fire protection.

**Storage**

**Requirements for storage areas and containers:** Keep container tightly closed in a dry and well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

### SECTION 8: Exposure controls/personal protection

**Ingredients with workplace control parameters**
**Inhaltsstoffe**

<table>
<thead>
<tr>
<th>DE</th>
<th>Grundlage</th>
<th>Wert</th>
<th>Zu überwachende Parameter</th>
<th>Bemerkung</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene, Dimer Hydrogenated</td>
<td>DE TRGS 900</td>
<td>AGW</td>
<td>5 mg/m³</td>
<td>DFG, Y, Alveolengängige Fraktion</td>
</tr>
</tbody>
</table>

**DFG** Senatskommission zur Prüfung gesundheitsschädlicher Arbeitsstoffe der DFG (MAK-Kommission)

**Y** Ein Risiko der Fruchtschädigung braucht bei Einhaltung des Arbeitsplatzgrenzwertes und des biologischen Grenzwertes (BGW) nicht befürchtet zu werden

**DNEL**

- **End Use: Workers**
  - Routes of exposure: Inhalation
  - Potential health effects: Acute effects
  - Exposure time: 15 min
  - Value: 60 mg/m³

- **End Use: Consumers**
  - Routes of exposure: Inhalation
  - Potential health effects: Acute effects
  - Exposure time: 15 min
  - Value: 50 mg/m³

**Engineering measures**

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the workplace when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

**Personal protective equipment**

**Respiratory protection**

- Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Dusts and Mists. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

**Hand protection**

- The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakdown.

**Eye protection**

- Eye wash bottle with pure water. Tightly fitting safety goggles.

**Skin and body protection**

- Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Protective suit.
**Hygiene measures:**

When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

For additional details, see the Exposure Scenario in the Annex portion.

### SECTION 9: Physical and chemical properties

#### Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance</strong></td>
<td></td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Clear, colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
<tr>
<td><strong>Safety data</strong></td>
<td></td>
</tr>
<tr>
<td>Flash point, Method:</td>
<td>186 °C (367 °F)</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>no</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>324 °C (615 °F)</td>
</tr>
<tr>
<td>Molecular formula</td>
<td>UVCB</td>
</tr>
<tr>
<td>Molecular weight</td>
<td>Varies</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Freezing point</td>
<td>-52 °C (-62 °F)</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>277 °C (531 °F)</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>1,00 MMHG</td>
</tr>
<tr>
<td></td>
<td>at 150 °C (302 °F)</td>
</tr>
<tr>
<td>Relative density</td>
<td>0,81</td>
</tr>
<tr>
<td></td>
<td>at 15,6 °C (60,1 °F)</td>
</tr>
<tr>
<td>Density</td>
<td>806,8 g/l</td>
</tr>
<tr>
<td>Water solubility</td>
<td>Soluble in hydrocarbon solvents; insoluble in water.</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>log Pow: &gt; 4,82</td>
</tr>
<tr>
<td></td>
<td>at 21 °C (70 °F)</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>8,3 cSt</td>
</tr>
<tr>
<td></td>
<td>at 40 °C (104 °F)</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>(Air = 1.0)</td>
</tr>
</tbody>
</table>
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Synfluid® PAO 2.5 cSt

Evaporation rate : No data available

SECTION 10: Stability and reactivity

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid : No data available.

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

Acute oral toxicity
1-Dodecene, Dimer Hydrogenated : LD50 Oral: > 5.000 mg/kg
Species: Rat
Test substance: yes

Acute inhalation toxicity
1-Dodecene, Dimer Hydrogenated : LC50: 1,71 mg/l
Exposure time: 4 h
Species: Rat
Sex: female
Test atmosphere: dust/mist
Test substance: yes

Acute dermal toxicity
1-Dodecene, Dimer Hydrogenated : LD50 Dermal: >2000 milligram per kilogram
Species: Rat
Test substance: yes

Skin irritation
1-Dodecene, Dimer Hydrogenated : No skin irritation

Eye irritation
1-Dodecene, Dimer Hydrogenated : No eye irritation
Sensitization
1-Dodecene, Dimer Hydrogenated: Did not cause sensitization on laboratory animals.

Repeated dose toxicity
1-Dodecene, Dimer Hydrogenated: Species: Rat
Application Route: oral gavage
Dose: 0 up to 1000 mg/kg
Exposure time: 28 day
Number of exposures: daily
NOEL: 1.000 mg/kg

Aspiration toxicity
1-Dodecene, Dimer Hydrogenated: May be fatal if swallowed and enters airways.

Synfluid® PAO 2.5 cSt
Further information: Solvents may degrease the skin.

SECTION 12: Ecological information

Toxicity to fish
1-Dodecene, Dimer Hydrogenated: LL50: > 1.000 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
Test substance: yes
The product has low solubility in the test medium. An aqueous dispersion was tested.

Toxicity to daphnia and other aquatic invertebrates
1-Dodecene, Dimer Hydrogenated: EL50: > 1.000 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test substance: yes
The product has low solubility in the test medium. An aqueous dispersion was tested.

Toxicity to algae
1-Dodecene, Dimer Hydrogenated: EbC50: > 1.000 mg/l
Exposure time: 96 h
Species: Selenastrum capricornutum (algae)
Test substance: yes
The product has low solubility in the test medium. An aqueous dispersion was tested.

Biodegradability
1-Dodecene, Dimer Hydrogenated: Expected to be inherently biodegradable.
**Synfluid® PAO 2.5 cSt**

**Ecotoxicology Assessment**

<table>
<thead>
<tr>
<th>Results of PBT assessment</th>
<th>This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional ecological information</td>
<td>No data available</td>
</tr>
</tbody>
</table>

**SECTION 13: Disposal considerations**

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

| Product | Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company. |
| Contaminated packaging | Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. |

For additional details, see the Exposure Scenario in the Annex portion

**SECTION 14: Transport information**

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the bill of lading.

**US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

**ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))**

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR
TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR TRANSPORTATION BY THIS AGENCY.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information

National legislation
Chemical Safety Assessment
Ingredients : 1-Dodecene, Dimer
Hydrogenated

Major Accident Hazard : 96/82/EC Update:
Legislation : Not applicable

Notification status
Europe REACH : On the inventory, or in compliance with the inventory
Switzerland CH INV : Not in compliance with the inventory
United States of America TSCA : On the inventory, or in compliance with the inventory
Canada DSL : On the inventory, or in compliance with the inventory
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : Not in compliance with the inventory
Japan ENCS : On the inventory, or in compliance with the inventory
Korea KECI : Not in compliance with the inventory
Philippines PICCS : On the inventory, or in compliance with the inventory
China IECSC : On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 1
Reactivity Hazard: 0
Further information

Legacy SDS Number : 5939

NSF H1, HX-1 Registered, meets USDA 1998 H1 Guidelines

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

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

<table>
<thead>
<tr>
<th>Key or legend to abbreviations and acronyms used in the safety data sheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
</tr>
<tr>
<td>LD50</td>
</tr>
<tr>
<td>AICS</td>
</tr>
<tr>
<td>LOAEL</td>
</tr>
<tr>
<td>DSL</td>
</tr>
<tr>
<td>NFPA</td>
</tr>
<tr>
<td>NDSL</td>
</tr>
<tr>
<td>NIOSH</td>
</tr>
<tr>
<td>CNS</td>
</tr>
<tr>
<td>NTP</td>
</tr>
<tr>
<td>CAS</td>
</tr>
<tr>
<td>NZIoC</td>
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<tr>
<td>EC50</td>
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<tr>
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<td>NOEC</td>
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<td>EGEST</td>
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<td>OSHA</td>
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<tr>
<td>EOSCA</td>
</tr>
<tr>
<td>PEL</td>
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<tr>
<td>EINECS</td>
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<tr>
<td>PICCS</td>
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<td>MAK</td>
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<td>PRNT</td>
</tr>
<tr>
<td>GHS</td>
</tr>
<tr>
<td>RCRA</td>
</tr>
<tr>
<td>&gt;=</td>
</tr>
<tr>
<td>STEL</td>
</tr>
<tr>
<td>IC50</td>
</tr>
<tr>
<td>SARA</td>
</tr>
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<td>IARC</td>
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<tr>
<td>TLV</td>
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<tr>
<td>IECSC</td>
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<td>ENCS</td>
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<td>TSCA</td>
</tr>
<tr>
<td>KECl</td>
</tr>
<tr>
<td>UVCB</td>
</tr>
<tr>
<td>&lt;=</td>
</tr>
<tr>
<td>WHMIS</td>
</tr>
</tbody>
</table>

Full text of H-Statements referred to under sections 2 and 3.

SDS Number:100000013639

11/47
<table>
<thead>
<tr>
<th>Hazard Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H304</td>
<td>May be fatal if swallowed and enters airways.</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled.</td>
</tr>
<tr>
<td>H413</td>
<td>May cause long lasting harmful effects to aquatic life.</td>
</tr>
</tbody>
</table>
## Annex

### 1. Short title of Exposure Scenario: Manufacture

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU8, SU9, SU3: Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals, Industrial Manufacturing (all)</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC1: Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td></td>
<td>PROC2: Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td></td>
<td>PROC3: Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td></td>
<td>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td></td>
<td>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC15: Use as laboratory reagent</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC1, ERC4: Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles</td>
</tr>
<tr>
<td>Further information</td>
<td>Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities</td>
</tr>
</tbody>
</table>

### 2.1 Contributing scenario controlling environmental exposure for: ERC1, ERC4:

Manufacture of substances, Industrial use of processing aids in processes and products, not becoming part of articles

<table>
<thead>
<tr>
<th>Environment factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
</tr>
</tbody>
</table>

### Technical conditions and measures / Organizational measures

| Remarks | A quantitative risk assessment is not required for the environment. |

### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15:

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

<table>
<thead>
<tr>
<th>Amount used</th>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

**Organizational measures to prevent/limit releases, dispersion and exposure**

- Do not ingest. If swallowed then seek immediate medical assistance.

**3. Exposure estimation and reference to its source**

- Remarks: Not applicable

**4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario**

- Not applicable

1. **Short title of Exposure Scenario:** Distribution

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU3: Industrial Manufacturing (all)</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC1: Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td></td>
<td>PROC2: Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td></td>
<td>PROC3: Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td></td>
<td>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td></td>
<td>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/ large containers at dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</td>
</tr>
<tr>
<td></td>
<td>PROC15: Use as laboratory reagent</td>
</tr>
</tbody>
</table>

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

**SDS Number:** 100000013639
Further information:

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

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

Environment factors not influenced by risk management

Remarks: Not applicable

Technical conditions and measures / Organizational measures

Remarks: A quantitative risk assessment is not required for the environment.

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

Amount used

Remarks: Not applicable

Organizational measures to prevent/limit releases, dispersion and exposure

Do not ingest. If swallowed then seek immediate medical assistance.

3. Exposure estimation and reference to its source

Remarks: Not applicable
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Use as an intermediate**

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU8, SU9, SU3: Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals, Industrial Manufacturing (all)</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC1: Use in closed process, no likelihood of exposure PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC15: Use as laboratory reagent</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)</td>
</tr>
<tr>
<td>Further information</td>
<td>Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).</td>
</tr>
</tbody>
</table>

2.1 Contributing scenario controlling environmental exposure for: ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates)

<table>
<thead>
<tr>
<th>Environment factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Transfer of substance or preparation

Technical conditions and measures / Organizational measures

<table>
<thead>
<tr>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for the environment.</td>
</tr>
</tbody>
</table>
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**Version 1.9**  
**Revision Date 2016-05-30**

(charging/discharging) from/to vessels/large containers at non-dedicated facilities,  
Transfer of substance or preparation (charging/ discharging) from/to vessels/large containers at dedicated facilities, Use as laboratory reagent

<table>
<thead>
<tr>
<th>Amount used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks: Not applicable</td>
</tr>
</tbody>
</table>

**Organizational measures to prevent /limit releases, dispersion and exposure**  
Do not ingest. If swallowed then seek immediate medical assistance.

### 3. Exposure estimation and reference to its source

Remarks: Not applicable

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Formulation**

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU3, SU 10: Industrial Manufacturing (all), Formulation [mixing] of preparations and/or re-packing (excluding alloys)</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC1: Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td></td>
<td>PROC2: Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td></td>
<td>PROC3: Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td></td>
<td>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td></td>
<td>PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;</td>
</tr>
<tr>
<td></td>
<td>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</td>
</tr>
<tr>
<td></td>
<td>PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;</td>
</tr>
<tr>
<td></td>
<td>PROC15: Use as laboratory reagent</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental release category</th>
<th>ERC2: Formulation of preparations</th>
</tr>
</thead>
</table>

Further information:  
Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage,
## 2.1 Contributing scenario controlling environmental exposure for: ERC2: Formulation of preparations

**Environment factors not influenced by risk management**

| Remarks | Not applicable |

**Technical conditions and measures / Organizational measures**

| Remarks | A quantitative risk assessment is not required for the environment. |

## 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC9, PROC14, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Production of mixtures or articles by tableting, compression, extrusion, pelletization; Industrial setting; Use as laboratory reagent

**Product characteristics**

| Remarks | Liquid, vapour pressure < 0.5 kPa at STP |

**Amount used**

| Remarks | Not applicable |

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

| Remarks | Assumes use at not more than 20°C above ambient temperature, unless stated differently.; Assumes a good basic standard of occupational hygiene is implemented. |

**Organizational measures to prevent/limit releases, dispersion and exposure**

Do not ingest. If swallowed then seek immediate medical assistance.

## 2.2 Contributing scenario controlling worker exposure for: PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises

**Product characteristics**

| Remarks | Liquid, vapour pressure < 0.5 kPa at STP |
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Amount used
Remarks: Not applicable

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

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

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin.

2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;

Product characteristics
Remarks: Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks: Not applicable

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

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

Technical conditions and measures
Provide extraction ventilation at points where emissions occur.

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Workers/Consumers</th>
<th>Expose Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC4, CS16, CS55, CS56</td>
<td>ECETOC TRA Modified</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>5 mg/m3</td>
<td>0,9</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term</td>
<td>6.86 mg/kg/d</td>
<td>0,1</td>
<td></td>
</tr>
</tbody>
</table>

SDS Number: 100000013639 19/47
PROC5: Use in batch and other process (synthesis) where opportunity for exposure arises
CS16: General exposures (open systems)
CS55: Batch process
CS56: with sample collection

PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;
CS30: Mixing operations (open systems)

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1
Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. Short title of Exposure Scenario: **Use in coatings – industrial**

| Main User Groups | SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites |
| Sector of use    | SU3: Industrial Manufacturing (all) |
| Process category | PROC1: Use in closed process, no likelihood of exposure |
|                  | PROC2: Use in closed, continuous process with occasional controlled exposure |
|                  | PROC3: Use in closed batch process (synthesis or formulation) |
|                  | PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises |
|                  | PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting; |
|                  | PROC7: Industrial spraying |
|                  | PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities |
|                  | PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities |
|                  | PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) |
|                  | PROC10: Roller application or brushing |
|                  | PROC13: Treatment of articles by dipping and pouring |
|                  | PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting; |
|                  | PROC15: Use as laboratory reagent |

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

SDS Number: 100000013639 20/47
Further information : Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including materials receipt, storage, preparation and transfer from bulk and semi-bulk, application by spray, roller, spreader, dip, flow, fluidised bed on production lines and film formation) and equipment cleaning, maintenance and associated laboratory activities.

2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Environment factors not influenced by risk management
Remarks : Not applicable

Technical conditions and measures / Organizational measures
Remarks : A quantitative risk assessment is not required for the environment.

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

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks : Not applicable

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

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

Organizational measures to prevent /limit releases, dispersion and exposure

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Do not ingest. If swallowed then seek immediate medical assistance.

2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks : Not applicable

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

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

Technical conditions and measures
Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings. Ensure operation is undertaken outdoors. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour)

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374. Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. Wear a full face respirator conforming to EN140 with Type A filter or better.

3. Exposure estimation and reference to its source

Workers/Consumers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC7, CS97</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1 mg/m3</td>
<td>0,2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>2,143 mg/kg/d</td>
<td>0,0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,20</td>
</tr>
<tr>
<td>PROC7, CS34, CS10</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1,4 mg/m3</td>
<td>0,3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>4,286 mg/kg/d</td>
<td>0,0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0,29</td>
</tr>
</tbody>
</table>

PROC7: Industrial spraying
CS97: Spraying (automatic/robotic)

PROC7: Industrial spraying
CS34: Manual

SDS Number:100000013639  22/47
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. Short title of Exposure Scenario: Use in coatings – professional

Main User Groups : SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use : SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category : PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/ discharging) from/to vessels/ large containers at dedicated facilities
PROC10: Roller application or brushing
PROC11: Non industrial spraying
PROC13: Treatment of articles by dipping and pouring
PROC15: Use as laboratory reagent
PROC19: Hand-mixing with intimate contact and only PPE available

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

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

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems
Environment factors not influenced by risk management
Remarks : Not applicable

Technical conditions and measures / Organizational measures
Remarks : A quantitative risk assessment is not required for the environment.

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

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks : Not applicable

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

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

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks : Not applicable

Frequency and duration of use
Remarks : Covers daily exposures up to 8 hours (unless stated differently)
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Other operational conditions affecting workers exposure

Remarks: Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.

Technical conditions and measures

Provide extraction ventilation at points where emissions occur. Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour). Ensure operation is undertaken outdoors.

Organizational measures to prevent /limit releases, dispersion and exposure

Do not ingest. If swallowed then seek immediate medical assistance. Avoid carrying out activities involving exposure for more than 4 hours.

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

Wear suitable gloves tested to EN374.

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Workers/Consumers</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC11, CS34, CS10</td>
<td>ECETOC TRA Modified</td>
<td>Indoor</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>2.8 mg/m³</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>0.42856 mg/kg/d</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>PROC11, CS34, CS10</td>
<td>ECETOC TRA Modified</td>
<td>Outdoor</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1.4 mg/m³</td>
<td>0.3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>21.428 mg/kg/d</td>
<td>0.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td>0.46</td>
<td></td>
</tr>
</tbody>
</table>

PROC11: Non industrial spraying
CS34: Manual
CS10: Spraying

PROC11: Non industrial spraying
CS34: Manual
CS10: Spraying

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. Short title of Exposure Scenario: **Use in Coatings - Consumer**

Main User Groups: SU 21: Consumer uses: Private households (= general public = consumers)

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### Sector of use

**SU 21:** Consumer uses: Private households (= general public = consumers)

### Product category

- **PC1:** Adhesives, sealants
- **PC4:** Anti-Freeze and de-icing products
- **PC8:** Biocidal products (e.g. Disinfectants, pest control)
- **PC9a:** Coatings and paints, thinners, paint removers
- **PC9b:** Fillers, putties, plasters, modelling clay
- **PC9c:** Finger paints
- **PC15:** Non-metal-surface treatment products
- **PC18:** Ink and toners
- **PC23:** Leather tanning, dye, finishing, impregnation and care products
- **PC24:** Lubricants, greases, release products
- **PC31:** Polishes and wax blends
- **PC34:** Textile dyes, finishing and impregnating products; including bleaches and other processing aids

### Environmental release category

- **ERC8a, ERC8d:** Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems

### Further information

Covers the use in coatings (paints, inks, adhesives, etc) including exposures during use (including product transfer and preparation, application by brush, spray by hand or similar methods) and equipment cleaning.

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d

Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems

### Environment factors not influenced by risk management

**Remarks:** Not applicable

### Technical conditions and measures / Organizational measures

**Remarks:** A quantitative risk assessment is not required for the environment.

### 2.2 Contributing scenario controlling consumer exposure for: PC1, PC4, PC8, PC9a, PC9b, PC9c, PC15, PC18, PC23, PC24, PC31, PC34

Adhesives, sealants, Anti-Freeze and de-icing products, Biocidal products (e.g. Disinfectants, pest control), Coatings and paints, thinners, paint removers, Fillers, putties, plasters, modelling clay, Finger paints, Non-metal-surface treatment products, Ink and toners, Leather tanning, dye, finishing, impregnation and care products, Lubricants, greases, release products, Polishes and wax blends, Textile dyes, finishing and impregnating products; including bleaches and other processing aids

### Amount used

SDS Number: 100000013639
### 3. Exposure estimation and reference to its source

**Remarks:** Not applicable

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

**Not applicable**

1. **Short title of Exposure Scenario:** *Lubricants - Industrial*

#### Main User Groups
- SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

#### Sector of use
- SU3: Industrial Manufacturing (all)

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

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

#### Further information
Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of machinery/engines and similar articles, reworking on reject articles, equipment maintenance and disposal of wastes.
2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC7: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of substances in closed systems

Technical conditions and measures / Organizational measures
Remarks: A quantitative risk assessment is not required for the environment.

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

Product characteristics
Remarks: Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks: Not applicable

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

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

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

Product characteristics
Remarks: Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks: Not applicable

Frequency and duration of use
Remarks: Covers daily exposures up to 8 hours (unless stated differently)
Other operational conditions affecting workers exposure
Remarks: Assumes a good basic standard of occupational hygiene is implemented., Assumes use at not more than 20°C above ambient temperature, unless stated differently.

Technical conditions and measures
Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance., Automate activity where possible.

Conditions and measures related to personal protection, hygiene and health evaluation
Wear suitable gloves tested to EN374., Wear suitable coveralls to prevent exposure to the skin.

2.2 Contributing scenario controlling worker exposure for: PROC18: Greasing at high energy conditions

Product characteristics
Remarks: Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks: Not applicable

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

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

Technical conditions and measures
Restrict area of openings to equipment., Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

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

3. Exposure estimation and reference to its source

Workers/Consumers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC7, CS10</td>
<td>ECETOC TRA</td>
<td></td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1 mg/m3</td>
<td>0,2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>2,143 mg/kg/d</td>
<td>0,0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined</td>
<td></td>
<td>0,20</td>
</tr>
</tbody>
</table>

SDS Number:100000013639
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. Short title of Exposure Scenario: **Lubricants - Professional**

**Main User Groups**: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**Sector of use**: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**Process category**

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

**Environmental release category**: ERC8a, ERC8d, ERC9a, ERC9b: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

**Further information**: 

**SDS Number**: 100000013639
## 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b:
Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

**Frequency and duration of use**
- Continuous exposure: This substance only poses an acute risk, therefore a general population DNEL has not been derived, and an assessment of the risk from indirect exposure of man via the environment is not required.

**Environment factors not influenced by risk management**
- Remarks: Not applicable

**Technical conditions and measures / Organizational measures**
- Remarks: A quantitative risk assessment is not required for the environment.

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

**Product characteristics**
- Remarks: Liquid, vapour pressure < 0.5 kPa at STP

**Amount used**
- Remarks: Not applicable

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

**Other operational conditions affecting workers exposure**
- Remarks: Assumes use at not more than 20°C above ambient temperature, unless stated differently. Assumes a good basic standard of occupational hygiene is implemented.
Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

2.2 Contributing scenario controlling worker exposure for: PROC17, PROC18:
Lubrication at high energy conditions and in partly open process, Greasing at high energy conditions

Product characteristics
Remarks : Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks : Not applicable

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

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

Technical conditions and measures
Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

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

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Workers/Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributing Scenario</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>PROC17, CS17</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PROC17, CS17</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PROC18, CS17</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
PROC17: Lubrication at high energy conditions and in partly open process
CS17: Operation and lubrication of high energy open equipment

PROC17: Lubrication at high energy conditions and in partly open process
CS17: Operation and lubrication of high energy open equipment

PROC18: Greasing at high energy conditions
CS17: Operation and lubrication of high energy open equipment

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1
Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. Short title of Exposure Scenario: **Lubricants - Consumer**

Main User Groups : SU 21: Consumer uses: Private households (= general public = consumers)
Sector of use : SU 21: Consumer uses: Private households (= general public = consumers)
Product category : PC24: Lubricants, greases, release products
Environmental release category : ERC8a, ERC8d, ERC9a, ERC9b: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems
Further information : Covers the consumer use of formulated lubricants in closed and open systems including transfer operations, application, operation of engines and similar articles, equipment maintenance and disposal of waste oil.

2.2 Contributing scenario controlling consumer exposure for: PC24: Lubricants, greases, release products

Product characteristics
Concentration of the Substance in Mixture/Article : 
Remarks : Sprays

Amount used : 73 g
Remarks : Sprays

Frequency and duration of use
Exposure duration : 0,17 h
## 3. Exposure estimation and reference to its source

### Workers/Consumers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC24, PC24_3</td>
<td>ECETOC TRA Modified</td>
<td>Consumer – dermal, long-term – systemic</td>
<td>35.7 mg/kg/d</td>
<td>0.07</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumer – oral, long-term – systemic</td>
<td>0.00 mg/kg/d</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumer – inhalation, long-term – systemic</td>
<td>7500 mg/m3</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consumer – long-term – systemic Combined routes</td>
<td></td>
<td>0.07</td>
<td></td>
</tr>
</tbody>
</table>

PC24: Lubricants, greases, release products
PC24_3: Sprays

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

1. **Short title of Exposure Scenario**: Metal working fluids / rolling oils - Industrial

   **Main User Groups**: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
   **Sector of use**: SU3: Industrial Manufacturing (all)
   **Process category**: PROC1: Use in closed process, no likelihood of exposure
                          PROC2: Use in closed, continuous process with occasional
controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises
PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;
PROC7: Industrial spraying
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
PROC10: Roller application or brushing
PROC13: Treatment of articles by dipping and pouring
PROC17: Lubrication at high energy conditions and in partly open process

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

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

2.1 Contributing scenario controlling environmental exposure for: ERC4: Industrial use of processing aids in processes and products, not becoming part of articles

Frequency and duration of use
Continuous exposure : This substance only poses an acute risk, therefore a general population DNEL has not been derived, and an assessment of the risk from indirect exposure of man via the environment is not required.

Environment factors not influenced by risk management
Remarks : Not applicable

Technical conditions and measures / Organizational measures
Remarks : A quantitative risk assessment is not required for the environment.

2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC13, PROC17: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and
**Synfluid® PAO 2.5 cSt**

**Product characteristics**

| Remarks | : | Liquid, vapour pressure < 0.5 kPa at STP |

**Amount used**

| Remarks | : | Not applicable |

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

| Remarks | : | Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented. |

**Organizational measures to prevent /limit releases, dispersion and exposure**

Do not ingest. If swallowed then seek immediate medical assistance.

### 2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying

**Product characteristics**

| Remarks | : | Liquid, vapour pressure < 0.5 kPa at STP |

**Amount used**

| Remarks | : | Not applicable |

**Frequency and duration of use**

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

**Other operational conditions affecting workers exposure**

| Remarks | : | Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented. |

**Technical conditions and measures**

Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Do not ingest. If swallowed then seek immediate medical assistance., Automate activity where possible.

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

Wear suitable gloves (tested to EN374), coverall and eye protection., Wear a respirator conforming to EN140 with Type A filter or better.

### 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Treatment of articles by dipping and pouring, Lubrication at high energy conditions and in partly open process

| Remarks | : | Assumes use at not more than 20° C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented. |

**Technical conditions and measures**

Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

**Organizational measures to prevent /limit releases, dispersion and exposure**

Do not ingest. If swallowed then seek immediate medical assistance., Automate activity where possible.

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

Wear suitable gloves (tested to EN374), coverall and eye protection., Wear a respirator conforming to EN140 with Type A filter or better.
brushing

Product characteristics
Remarks: Liquid, vapour pressure < 0.5 kPa at STP

Amount used
Remarks: Not applicable

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

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

Technical conditions and measures
Provide a good standard of general or controlled ventilation (10 to 15 air changes per hour)

Organizational measures to prevent /limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

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

3. Exposure estimation and reference to its source

<table>
<thead>
<tr>
<th>Workers/Consumers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contribution Scenario</strong></td>
</tr>
<tr>
<td>PROC7, CS10</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>PROC10, CS13</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

PROC7: Industrial spraying
CS10: Spraying
PROC10: Roller application or brushing
CS13: Manual roller application or brushing.

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

SDS Number:100000013639 37/47
When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1. Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. **Short title of Exposure Scenario:** Metal working fluids / rolling oils – Professional

**Main User Groups**: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

**Sector of use**: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

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

**Environmental release category**
- ERC8a, ERC8d, ERC9a, ERC9b: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

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

2.1 **Contributing scenario controlling environmental exposure for:** ERC8a, ERC8d, ERC9a, ERC9b: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems, Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

**Frequency and duration of use**
- **Continuous exposure**: This substance only poses an acute risk, therefore a general population DNEL has not been derived, and an assessment of the risk from indirect exposure of man via the environment is not required.

**Environment factors not influenced by risk management**
### 2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC8a, PROC8b, PROC9, PROC10, PROC13: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/ discharging) from/ to vessels/ large containers at dedicated facilities, Transfer of substance or preparation into small containers (dedicated filling line, including weighing), Roller application or brushing, Treatment of articles by dipping and pouring

#### Technical conditions and measures / Organizational measures

**Remarks**: A quantitative risk assessment is not required for the environment.

#### Product characteristics

**Remarks**: Liquid, vapour pressure < 0.5 kPa at STP

#### Amount used

**Remarks**: Not applicable

#### Frequency and duration of use

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

#### Other operational conditions affecting workers exposure

**Remarks**: Assumes use at not more than 20°C above ambient temperature, unless stated differently, Assumes a good basic standard of occupational hygiene is implemented.

#### Organizational measures to prevent /limit releases, dispersion and exposure

- Do not ingest. If swallowed then seek immediate medical assistance.

### 2.2 Contributing scenario controlling worker exposure for: PROC11: Non industrial spraying

#### Technical conditions and measures

- Ensure operation is undertaken outdoors.
- Provide a good standard of general ventilation (not less than 3 to 5 air changes per hour), Minimize exposure by partial enclosure of the operation or equipment and...
provide extract ventilation at openings.

**Organizational measures to prevent /limit releases, dispersion and exposure**
Do not ingest. If swallowed then seek immediate medical assistance.

**Conditions and measures related to personal protection, hygiene and health evaluation**
Wear chemically resistant gloves (tested to EN374) in combination with specific activity training., Wear a respirator conforming to EN140 with Type A filter or better., Wear suitable gloves tested to EN374.

### 2.2 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions and in partly open process

#### Product characteristics

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at STP</th>
</tr>
</thead>
</table>

#### Amount used

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

#### Frequency and duration of use

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Covers daily exposures up to 8 hours (unless stated differently)</th>
</tr>
</thead>
</table>

#### Other operational conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Assumes use at not more than 20°C above ambient temperature, unless stated differently., Assumes a good basic standard of occupational hygiene is implemented.</th>
</tr>
</thead>
</table>

#### Technical conditions and measures

Minimize exposure by partial enclosure of the operation or equipment and provide extract ventilation at openings.

**Organizational measures to prevent /limit releases, dispersion and exposure**
Do not ingest. If swallowed then seek immediate medical assistance.

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

### 3. Exposure estimation and reference to its source

#### Workers/Consumers

<table>
<thead>
<tr>
<th>Contributing Scenario</th>
<th>Exposure Assessment Method</th>
<th>Specific conditions</th>
<th>Value type</th>
<th>Level of Exposure</th>
<th>Risk characterization ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC11, CS10</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>1.4 mg/m³</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>21,428 mg/kg/d</td>
<td>0.2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0.46</td>
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<tr>
<td>PROC11, CS10</td>
<td>ECETOC TRA</td>
<td>Worker – inhalation, long-term – systemic</td>
<td>0.4 mg/m³</td>
<td>0.1</td>
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<tr>
<td></td>
<td></td>
<td>Worker – dermal, long-term – systemic</td>
<td>2,1428 mg/kg/d</td>
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<tr>
<td></td>
<td></td>
<td>Worker – long-term – systemic Combined routes</td>
<td></td>
<td>0.09</td>
<td></td>
</tr>
</tbody>
</table>
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

When the recommended risk management measures (RMMs) and operational conditions (OCs) are observed, exposures are not expected to exceed the predicted DNELs and the resulting risk characterisation ratios are expected to be less than 1.

Confirm that RMMs and OCs are as described or of equivalent efficiency.

1. Short title of Exposure Scenario: **Functional Fluids - Industrial**

Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites

Sector of use: SU3: Industrial Manufacturing (all)

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

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

Further information:
- Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in industrial equipment including maintenance and related material transfers.

2.1 Contributing scenario controlling environmental exposure for: ERC7: Industrial use of substances in closed systems
Synfluid® PAO 2.5 cSt

Environment factors not influenced by risk management
Remarks: Not applicable

Technical conditions and measures / Organizational measures
Remarks: A quantitative risk assessment is not required for the environment.

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

Amount used
Remarks: Not applicable

Organizational measures to prevent/limit releases, dispersion and exposure
Do not ingest. If swallowed then seek immediate medical assistance.

3. Exposure estimation and reference to its source
Remarks: Not applicable

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario
Not applicable
1. Short title of Exposure Scenario: Functional Fluids - Professional

Main User Groups: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Sector of use: SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Process category: PROC1: Use in closed process, no likelihood of exposure
PROC2: Use in closed, continuous process with occasional controlled exposure
PROC3: Use in closed batch process (synthesis or formulation)
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
PROC9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)
## Environmental release category

**PROC20**: Heat and pressure transfer fluids in dispersive, professional use but closed systems

**Environmental release category**: ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

**Further information**: Use as functional fluids e.g. cable oils, transfer oils, coolants, insulators, refrigerants, hydraulic fluids in professional equipment including maintenance and related material transfers.

## 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

**Environment factors not influenced by risk management**

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Technical conditions and measures / Organizational measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remarks</strong></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Amount used</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remarks</strong></td>
</tr>
</tbody>
</table>

## 3. Exposure estimation and reference to its source

**Remarks**: Not applicable

## 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

**Not applicable**

<table>
<thead>
<tr>
<th>SDS Number</th>
<th>100000013639</th>
</tr>
</thead>
</table>
# 1. Short title of Exposure Scenario: Functional Fluids - Consumer

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 21: Consumer uses: Private households (= general public = consumers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU 21: Consumer uses: Private households (= general public = consumers)</td>
</tr>
<tr>
<td>Product category</td>
<td>PC16: Heat transfer fluids, PC17: Hydraulic fluids</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems</td>
</tr>
<tr>
<td>Further information</td>
<td>Use of sealed items containing functional fluids e.g. transfer oils, hydraulic fluids, refrigerants.</td>
</tr>
</tbody>
</table>

## 2.1 Contributing scenario controlling environmental exposure for: ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems

Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

Technical conditions and measures / Organizational measures

<table>
<thead>
<tr>
<th>Remarks</th>
<th>A quantitative risk assessment is not required for the environment.</th>
</tr>
</thead>
</table>

## 2.2 Contributing scenario controlling consumer exposure for: PC16, PC17: Heat transfer fluids, Hydraulic fluids

### Amount used

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)

<table>
<thead>
<tr>
<th>Consumer Measures</th>
<th>Do not ingest. If swallowed then seek immediate medical assistance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Because the use is not expected to result in aerosol exposures, a quantitative risk assessment is not required for human health to examine the identified hazard of acute inhalation.</td>
</tr>
</tbody>
</table>
3. Exposure estimation and reference to its source

Remarks: Not applicable

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

Not applicable

1. Short title of Exposure Scenario: **Use in polymer production – industrial**

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU 10, SU3: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys), Industrial Manufacturing (all)</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC1: Use in closed process, no likelihood of exposure</td>
</tr>
<tr>
<td></td>
<td>PROC2: Use in closed, continuous process with occasional controlled exposure</td>
</tr>
<tr>
<td></td>
<td>PROC3: Use in closed batch process (synthesis or formulation)</td>
</tr>
<tr>
<td></td>
<td>PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises</td>
</tr>
<tr>
<td></td>
<td>PROC5: Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting;</td>
</tr>
<tr>
<td></td>
<td>PROC6: Calendering operations</td>
</tr>
<tr>
<td></td>
<td>PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities</td>
</tr>
<tr>
<td></td>
<td>PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;</td>
</tr>
<tr>
<td></td>
<td>PROC15: Use as laboratory reagent</td>
</tr>
</tbody>
</table>

Environmental release category: ERC4, ERC6c: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of monomers for manufacture of thermoplastics

Further information: Manufacture of polymers from monomers in continuous and batch processes, include sparging, discharging, and reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing).

2.1 Contributing scenario controlling environmental exposure for: ERC4, ERC6c: Industrial use of processing aids in processes and products, not becoming part of articles, Industrial use of monomers for manufacture of thermoplastics

Environment factors not influenced by risk management

Remarks: Not applicable

SDS Number: 100000013639
2.2 Contributing scenario controlling worker exposure for: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC14, PROC15: Use in closed process, no likelihood of exposure, Use in closed, continuous process with occasional controlled exposure, Use in closed batch process (synthesis or formulation), Use in batch and other process (synthesis) where opportunity for exposure arises, Mixing or blending in batch processes for formulation of mixtures and articles (multistage and/or significant contact) Industrial setting; Calendering operations, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities, Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities, Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting; Use as laboratory reagent

3. Exposure estimation and reference to its source

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

1. Short title of Exposure Scenario: Other consumer uses

Main User Groups: SU 21: Consumer uses: Private households (= general public = consumers)
Sector of use: SU 21: Consumer uses: Private households (= general public = consumers)
Product category: PC28: Perfumes, fragrances
PC39: Cosmetics, personal care products
Environmental release category: ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use
of processing aids in open systems

Environment factors not influenced by risk management
Remarks: Not applicable

Technical conditions and measures / Organizational measures
Remarks: A quantitative risk assessment is not required for the environment.

2.2 Contributing scenario controlling consumer exposure for: PC28, PC39: Perfumes, fragrances, Cosmetics, personal care products

Amount used
Remarks: Not applicable

Conditions and measures related to protection of consumer (e.g. behavioral advice, personal protection and hygiene)
Consumer Measures: Do not ingest. If swallowed then seek immediate medical assistance.

3. Exposure estimation and reference to its source
Remarks: Not applicable

4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario
Not applicable