SAFETY DATA SHEET

AlphaPlus® 1-DODECENE


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

1.1

Product information

Product Name: AlphaPlus® 1-DODECENE
Material: 1087853, 1037008, 1015429, 1021778

EC-No. Registration number

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No. EC-No. Index No.</th>
<th>Legal Entity Registration number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene</td>
<td>112-41-4 203-968-4</td>
<td>Chevron Phillips Chemical Company LP 01-2119475509-26-0003</td>
</tr>
</tbody>
</table>

1.2

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

Relevant Identified Uses Supported: Manufacture
Use as an intermediate
Formulation
Use in coatings – industrial
Use in coatings – professional
Use in Coatings - Consumer
Use as a cleaning agent – industrial
Use as a cleaning agent – professional
Use as a cleaning agent – consumer
Use in Oil and Gas field drilling and production operations - Industrial
Use in Oil and Gas field drilling and production operations – Professional
Lubricants - Industrial
Lubricants - Professional
Lubricants - Consumer
Functional Fluids - Industrial
Functional Fluids - Professional
Use in polymer production – industrial

1.3

Details of the supplier of the safety data sheet

Company: Chevron Phillips Chemical Company LP
Normal Alpha Olefins (NAO)
10001 Six Pines Drive
The Woodlands, TX 77380

SDS Number: 100000068203
SECTION 2: Hazards identification

2.1 Classification of the substance or mixture
REGULATION (EC) No 1272/2008

Aspiration hazard, Category 1

H304: May be fatal if swallowed and enter airways.

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

Hazard pictograms

Signal Word: Danger

Hazard Statements: H304

Precautionary Statements: Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331 Do NOT induce vomiting.

Storage:

SDS Number: 100000068203 2/76
Hazardous ingredients which must be listed on the label:
- 112-41-4 1-Dodecene

Additional Labeling:
EUH066 Repeated exposure may cause skin dryness or cracking.
The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity:
5%

SECTION 3: Composition/information on ingredients

### 3.1 - 3.2 Substance or Mixture

**Synonyms**: NAO 12
- Dodecene-1 (C12)
- C12H24

**Molecular formula**: C12H24

**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</td>
<td>112-41-4 203-968-4</td>
<td>Asp. Tox. 1; H304</td>
<td>95 - 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

### 4.1 Description of 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**: If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

**In case of skin contact**: If on skin, rinse well with water. If on clothes, remove clothes.

**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: 77 °C (171 °F)
Autoignition temperature: 225 °C (437 °F)

5.1 Extinguishing media
Suitable extinguishing media: Carbon dioxide (CO2).
Unsuitable extinguishing media: High volume water jet.

5.2 Special hazards arising from the substance or mixture
Specific hazards during firefighting: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.3 Advice for firefighters
Special protective equipment for fire-fighters: Wear self-contained breathing apparatus for firefighting if necessary.
Further information: For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
Fire and explosion protection: Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Personal precautions: Use personal protective equipment. Ensure adequate ventilation.

6.2 Environmental precautions
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.

6.3 Methods and materials for containment and cleaning up
Methods for cleaning up: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections
Reference to other sections: For personal protection see section 8. For disposal considerations see section 13. For additional details, see the Exposure Scenario in the Annex portion.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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: Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Requirements for storage areas and containers: No smoking. 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

8.1 Control parameters

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>SE</th>
<th>Beståndsdelar</th>
<th>Grundval</th>
<th>Värde</th>
<th>Kontrollparametrar</th>
<th>Anmärkning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene</td>
<td>SE AFS</td>
<td>NGV</td>
<td>350 mg/m³</td>
<td>V, 19.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SE AFS</td>
<td>KGV</td>
<td>500 mg/m³</td>
<td>V, 19.</td>
<td></td>
</tr>
</tbody>
</table>

19 Gränsvärde avser kolväten i ångform dvs. upp till 12 kolatomer. Vid exponering för kolväten med mer än 12 kolatomer som förekommer i form av aerosol, partiklar eller vätskedroppar, tillämpas gränsvärde för organiskt damm och dimma, 5 mg/m³. Gränsvärde gäller inte för aromatfri lacknafta (< 2 viktprocent) som har eget gränsvärde.

V Vägledande korttidsgränsvärde ska användas som ett rekommenderat högsta värde som inte bör överskridas.

NO

<table>
<thead>
<tr>
<th>Komponenter</th>
<th>Grundlag</th>
<th>Verdi</th>
<th>Kontrollparametrar</th>
<th>Nota</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene</td>
<td>FOR-2011-12-06-1358</td>
<td>GV</td>
<td>40 ppm, 275 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

LT

<table>
<thead>
<tr>
<th>Komponentei</th>
<th>Saltinis</th>
<th>Vertė</th>
<th>Kontrolės parametrai</th>
<th>Pastaba</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene</td>
<td>LT OEL</td>
<td>IPRD</td>
<td>350 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>LT OEL</td>
<td>TPRD</td>
<td>500 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

EE

<table>
<thead>
<tr>
<th>Komponendid, osad</th>
<th>Alused</th>
<th>Väärtus</th>
<th>Kontrollparametrat</th>
<th>Märkused</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene</td>
<td>EE OEL</td>
<td>Piirnorm</td>
<td>5 mg/m³</td>
<td>Aerosool</td>
</tr>
<tr>
<td></td>
<td>EE OEL</td>
<td>Piirnorm</td>
<td>350 mg/m³</td>
<td>11, Aur</td>
</tr>
<tr>
<td></td>
<td>EE OEL</td>
<td>Lühiajalise</td>
<td>500 mg/m³</td>
<td>11, Aur</td>
</tr>
</tbody>
</table>

SDS Number: 100000068203 5/76
8.2 Exposure controls

Engineering measures

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 Organic Vapors. 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 breakthrough.

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 workplace. Wear as appropriate: Flame-resistant clothing. Footwear protecting against chemicals.
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

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

**Appearance**
- Form: Liquid
- Physical state: Liquid
- Color: Clear, colorless

**Safety data**
- Flash point: 77 ºC (171 ºF)
- Lower explosion limit: 0,6 % (V)
- Upper explosion limit: 5,4 % (V)
- Oxidizing properties: no
- Autoignition temperature: 225 ºC (437 ºF)
- Thermal decomposition: No data available

**Molecular formula**: C12H24
**Molecular weight**: 168,36 g/mol
**pH**: Not applicable
**Freezing point**: -35 ºC (-31 ºF)

**Boiling point/boiling range**: 213 ºC (415 ºF)
**Vapor pressure**: 19,30 Pa at 25 ºC (77 ºF)
0,35 kPa at 65 ºC (149 ºF)

**Relative density**: 0,76 at 15,6 ºC (60,1 ºF)

**Density**: 0,76 g/m³ at 20 ºC (68 ºF)
762 kg/m³ at 15 ºC (59 ºF)
736 kg/m³ at 50 ºC (122 ºF)
SAFETY DATA SHEET

AlphaPlus® 1-DODECENE

Version 5.1

Revision Date 2019-10-01

Water solubility : Soluble in hydrocarbon solvents; insoluble in water.
Partition coefficient: n-octanol/water : No data available
Viscosity, kinematic : 0.68 cSt at 100 °C (212 °F)
Relative vapor density : 5.81 (Air = 1.0)
Evaporation rate : No data available

SECTION 10: Stability and reactivity

10.1

Reactivity : No decomposition if stored and applied as directed.

10.2

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

10.3

Possibility of hazardous reactions

Hazardous reactions : Further information: No decomposition if stored and applied as directed.

Hazardous reactions: Vapors may form explosive mixture with air.

10.4

Conditions to avoid : Heat, flames and sparks.

10.5

Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

10.6

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

SECTION 11: Toxicological information

11.1

Information on toxicological effects

Acute oral toxicity

1-Dodecene : LD50: > 10.000 mg/kg

SDS Number:100000068203
**AlphaPlus® 1-DODECENE**

| Substance | Species: Rat  
|           | Sex: Male  
|           | Method: Fixed Dose Method  
|           | Information given is based on data obtained from similar substances.  

### Acute inhalation toxicity

1-Dodecene: Not classified due to data which are conclusive although insufficient for classification.

### Skin irritation

1-Dodecene: No skin irritation

### Eye irritation

1-Dodecene: No eye irritation  
Information given is based on data obtained from similar substances.

### Sensitization

1-Dodecene: Did not cause sensitization on laboratory animals.

### Repeated dose toxicity

1-Dodecene: Species: Rat, Male and female  
Sex: Male and female  
Application Route: Oral diet  
Dose: 0, 100, 500, 1000 mg/kg  
Exposure time: 13 wk  
Number of exposures: daily  
NOEL: 1.000 mg/kg  
Method: OECD Guideline 408  
Information given is based on data obtained from similar substances.

1-Dodecene: Species: Rat, Male and female  
Sex: Male and female  
Application Route: Inhalation  
Dose: 0, 300, 1000, 3000 ppm  
Exposure time: 13 wk  
Number of exposures: 6 hrs/d, 5 d/wk  
NOEL: 3000 ppm  
Method: OECD Guideline 413  
Information given is based on data obtained from similar substances.

### Genotoxicity in vitro

1-Dodecene: Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative
Reproductive toxicity
1-Dodecene : Species: Rat
Sex: male
Application Route: Oral diet
Dose: 0, 100, 500, or 1000 mg/kg
Exposure time: 44 D
Number of exposures: daily
Method: OECD Guideline 421
NOAEL Parent: 1.000 mg/kg
NOAEL F1: 1.000 mg/kg

Species: Rat
Sex: female
Application Route: Oral diet
Dose: 0, 100, 500, or 1000 mg/kg
Exposure time: 41-55 D
Number of exposures: daily
Method: OECD Guideline 421
NOAEL Parent: 1.000 mg/kg
NOAEL F1: 1.000 mg/kg

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

CMR effects
1-Dodecene : Carcinogenicity: Not available
Mutagenicity: Tests on bacterial or mammalian cell cultures did not show mutagenic effects.
Teratogenicity: Not available
Reproductive toxicity: Animal testing did not show any effects on fertility.

AlphaPlus® 1-DODECENE
Further information : Solvents may degrease the skin.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish
1-Dodecene : No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates
1-Dodecene : No toxicity at the limit of solubility.
AlphaPlus® 1-DODECENE

Toxicity to algae
1-Dodecene : No toxicity at the limit of solubility.

12.2 Persistence and degradability

Biodegradability
1-Dodecene : 74.1 - 80 %
Testing period: 28 d
Method: OECD Test Guideline 301
This material is expected to be readily biodegradable.

12.3 Bioaccumulative potential

Bioaccumulation
1-Dodecene : No data available

12.4 Mobility in soil

Mobility
1-Dodecene : No data available

12.5 Results of PBT and vPvB assessment

Results of PBT assessment
1-Dodecene : Non-classified PBT substance, Non-classified vPvB substance

12.6 Other adverse effects

Additional ecological information : No data available

Ecotoxicology Assessment

Short-term (acute) aquatic hazard
1-Dodecene : This material is not expected to be harmful to aquatic organisms.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

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.
### SECTION 14: Transport information

#### 14.1 - 14.7

**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)**

UN3295, HYDROCARBONS, LIQUID, N.O.S., COMBUSTIBLE LIQUID, III

**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

SDS Number: 100000068203

12/76
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
National legislation

Water contaminating class : WGK 1 slightly water endangering

15.2 Chemical Safety Assessment
Components : dodec-1-ene A Chemical Safety Assessment 203-968-4 has been carried out for this substance.

Major Accident Hazard Legislation : 96/82/EC Update: 2003 Directive 96/82/EC does not apply

Notification status
Europe REACH : This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV : On the inventory, or in compliance with the inventory
United States of America (USA) TSCA : On or in compliance with the active portion of the TSCA inventory
Canada DSL : All components of this product are on the Canadian DSL
Australia AICS : On the inventory, or in compliance with the inventory
New Zealand NZIoC : On the inventory, or in compliance with the inventory
Japan ENCS : On the inventory, or in compliance with the inventory
Korea KECI : A substance(s) in this product was not registered, notified to be registered, or exempted from registration by CPChem according to K-REACH regulations.
Importation or manufacture of this product is still permitted provided the Korean Importer of Record has themselves notified the substance.

Philippines PICCS : On the inventory, or in compliance with the inventory
China IECSC : On the inventory, or in compliance with the inventory
Taiwan TCSI : On the inventory, or in compliance with the inventory
AlphaPlus® 1-DODECENE

Version 5.1

Revision Date 2019-10-01

SECTION 16: Other information

NFPA Classification

Health Hazard: 0
Fire Hazard: 2
Reactivity Hazard: 0

Further information

Legacy SDS Number : PE0019

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.

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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
</tr>
<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
</tr>
<tr>
<td>EGEST</td>
<td>EOSCA Generic Exposure Scenario Tool</td>
</tr>
<tr>
<td>OSHA</td>
<td>Occupational Safety &amp; Health Administration</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
</tr>
<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
</tr>
<tr>
<td>&gt;=</td>
<td>Greater Than or Equal To</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term Exposure Limit</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act.</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
</tr>
<tr>
<td>TWA</td>
<td>TimeWeighted Average</td>
</tr>
<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and</td>
</tr>
<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
</tr>
</tbody>
</table>
### New Chemical Substances

<table>
<thead>
<tr>
<th>KECl</th>
<th>Korea, Existing Chemical Inventory</th>
<th>UVCB</th>
<th>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=</td>
<td>Less Than or Equal To</td>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
</tr>
<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

H304 May be fatal if swallowed and enters airways.
## 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>SU3, SU8, SU9: Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals</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>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

(Msafe) : 213.676 kg/day

<table>
<thead>
<tr>
<th>Environment factors not influenced by risk management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conditions and measures related to municipal sewage treatment plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant : Municipal sewage treatment plant</td>
</tr>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
</tr>
<tr>
<td>Effectiveness (of a measure) : 96,4 %</td>
</tr>
<tr>
<td>Sludge Treatment : Prevent discharge of undissolved substance to or recover</td>
</tr>
</tbody>
</table>
### AlphaPlus® 1-DODECENE

**Version 5.1**

**Revision Date** 2019-10-01

---

**Conditions and measures related to external treatment of waste for disposal**

**Waste treatment**

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

---

**2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions**

**Product characteristics**

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks:** Not applicable

**Frequency and duration of use**

---

**2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions**

**Product characteristics**

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks:** Not applicable

**Frequency and duration of use**

---

**2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition**

**Product characteristics**

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks:** Not applicable

**Frequency and duration of use**

---

**2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises**

**Product characteristics**

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

---

**SDS Number:** 100000068203
**AlphaPlus® 1-DODECENE**

**SAFETY DATA SHEET**

**Version 5.1**

**Revision Date 2019-10-01**

<table>
<thead>
<tr>
<th>Amount used</th>
<th>Remarks</th>
<th>Frequency and duration of use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

**2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities**

**Product characteristics**
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks:** Not applicable

**Frequency and duration of use**

**2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities**

**Product characteristics**
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks:** Not applicable

**Frequency and duration of use**

**2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent**

**Product characteristics**
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks:** Not applicable

**Frequency and duration of use**

**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**

**SDS Number:** 100000068203
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

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

**Main User Groups**: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites  
**Sector of use**: SU3, SU8, SU9: Industrial Manufacturing (all), Manufacture of bulk, large scale chemicals (including petroleum products), Manufacture of fine chemicals 
**Process category**: PROC1: Use in closed process, no likelihood of exposure  
PROC2: Use in closed, continuous process with occasional controlled exposure  
PROC3: Use in closed batch process (synthesis or formulation)  
PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises  
PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities  
PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities  
PROC15: Use as laboratory reagent 

**Environmental release category**: ERC6a: Industrial use resulting in manufacture of another substance (use of intermediates) 

**Further information**: 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). 

#### 2.1 Contributing scenario controlling environmental exposure for: ERC6a: Use of intermediate 

(Msafe) : 43.975 kg/day  

**Environment factors not influenced by risk management**  
Flow rate : 18,000 m3/d  
Dilution Factor (River) : 10  
Dilution Factor (Coastal Areas) : 100  

**Conditions and measures related to municipal sewage treatment plant**  
Type of Sewage Treatment Plant : Municipal sewage treatment plant
## AlphaPlus® 1-DODECENE

### Version 5.1  
Revision Date 2019-10-01

### Flow rate of sewage treatment plant effluent
- **Flow rate**: 2.000 m³/d
- **Effectiveness (of a measure)**: 96.4 %
- **Sludge Treatment**: Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.

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

## 2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

### Product characteristics
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks**: Not applicable

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

### Product characteristics
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks**: Not applicable

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

### Product characteristics
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks**: Not applicable

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

---

**SDS Number:** 100000068203  
**Page:** 20/76
## Product characteristics

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

### Amount used

| Remarks | Not applicable |

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

### Amount used

| Remarks | Not applicable |

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

### Amount used

| Remarks | Not applicable |

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

### Amount used

| Remarks | Not applicable |

### Frequency and duration of use

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

### 4. Guidance to Downstream User to evaluate whether he works inside the boundaries set
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

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

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

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

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

Sector of use: SU3, SU 10: Industrial Manufacturing (all), Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)

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 PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

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

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

PROC 10: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;

PROC15: Use as laboratory reagent

Environmental release category: ERC2: Formulation of preparations

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

2.1 Contributing scenario controlling environmental exposure for:ERC2: Formulation into mixture

(Msafe) : 74.906 kg/day
# AlphaPlus® 1-DODECENE

## Version 5.1

### Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Factor</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>18,000 m³/d</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
<td>10</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

### Conditions and measures related to municipal sewage treatment plant

| Type of Sewage Treatment Plant       | Municipal sewage treatment plant |
| Flow rate of sewage treatment plant  | 2,000 m³/d                      |
| Effectiveness (of a measure)        | 96.4 %                           |
| Sludge Treatment                    | Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed. |

### Conditions and measures related to external treatment of waste for disposal

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

| Product characteristics             | Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure |
| Amount used                         | Not applicable                                                      |

### 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

| Product characteristics             | Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure |
| Amount used                         | Not applicable                                                      |

### 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

| Product characteristics             | Liquid, vapor pressure < 0.5 kPa at Standard Temperature and Pressure |

SDS Number:100000068203 23/76
## 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td>Remarks : Not applicable</td>
</tr>
</tbody>
</table>

## 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td>Remarks : Not applicable</td>
</tr>
</tbody>
</table>

## 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td>Remarks : Not applicable</td>
</tr>
</tbody>
</table>

## 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td>Remarks : Not applicable</td>
</tr>
</tbody>
</table>
### 2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC14: Tabletting, compression, extrusion, peletisation, granulation

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 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

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

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**
- SU 3: Industrial Manufacturing (all)

**Process category**
- PROC 1: Use in closed process, no likelihood of exposure
- PROC 2: Use in closed, continuous process with occasional controlled exposure
- PROC 3: Use in closed batch process (synthesis or formulation)
- PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises
- PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
- PROC 7: Industrial spraying
- PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
- PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
- PROC 10: Roller application or brushing
- PROC 13: Treatment of articles by dipping and pouring
- PROC 14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting
- PROC 15: Use as laboratory reagent

**Environmental release category**
- ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles

**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: ERC 4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

(Msafe) : 11.905 kg/day

**Environment factors not influenced by risk management**
Flow rate : 18.000 m³/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100
## Conditions and measures related to municipal sewage treatment plant

<table>
<thead>
<tr>
<th>Type of Sewage Treatment Plant</th>
<th>Municipal sewage treatment plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
<td>2,000 m³/d</td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
<td>96.4%</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.</td>
</tr>
</tbody>
</table>

## Conditions and measures related to external treatment of waste for disposal

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

## 2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

### Product characteristics

<table>
<thead>
<tr>
<th>Remarks</th>
<th>Covers percentage substance in the product up to 100 % (unless stated differently)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

### Amount used

| Remarks | Not applicable |

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

### Product characteristics

| Physical Form (at time of use) | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

### Amount used

| Remarks | Not applicable |

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

### Product characteristics

| Physical Form (at time of use) | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

### Amount used

<p>| SDS Number:100000068203 | 27/76 |</p>
<table>
<thead>
<tr>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
<tr>
<td>Amount used</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
<tr>
<td>Amount used</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
<tr>
<td>Amount used</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
</tr>
<tr>
<td>Amount used</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
</tr>
</tbody>
</table>
2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC14: Tabletting, compression, extrusion, peletisation, granulation

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SDS Number:100000068203</td>
<td>29/76</td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

## 2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Frequency and duration of use</td>
<td></td>
</tr>
</tbody>
</table>

## 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

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

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

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

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

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

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</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>PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)</td>
</tr>
<tr>
<td></td>
<td>PROC8a: Transfer of substance or preparation</td>
</tr>
</tbody>
</table>

SDS Number:100000068203

30/76
(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:
Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

(Msafe) : 25 kg/day

Environment factors not influenced by risk management
Flow rate : 18,000 m3/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m3/d
Effectiveness (of a measure) : 96.4 %
Sludge Treatment : Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.

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

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

SDS Number:100000068203 31/76
## Product characteristics

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

**Product characteristics**

SDS Number: 100000068203
### Physical Form (at time of use)
- Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- Remarks: Not applicable

### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

#### Product characteristics
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

#### Amount used
- Remarks: Not applicable

#### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

#### Product characteristics
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

#### Amount used
- Remarks: Not applicable

#### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

#### Product characteristics
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

#### Amount used
- Remarks: Not applicable

#### Frequency and duration of use

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

#### Product characteristics
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

#### Amount used
- Remarks: Not applicable
Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
- **Amount used**
  - **Remarks**: Not applicable

**Frequency and duration of use**

### 2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
- **Amount used**
  - **Remarks**: Not applicable

**Frequency and duration of use**

### 2.2 Contributing scenario controlling worker exposure for: PROC19: Manual activities involving hand contact

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
- **Amount used**
  - **Remarks**: Not applicable

**Frequency and duration of use**

### 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

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

1. Short title of Exposure Scenario: **Use in Coatings - 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 :
- 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: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

(Msafe) : 23 kg/day

Environment factors not influenced by risk management

Flow rate : 18.000 m3/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Conditions and measures related to municipal sewage treatment plant

Type of Sewage Treatment Plant : Municipal sewage treatment plant

SDS Number: 100000068203
### Flow rate of sewage treatment plant effluent
- **Flow rate**: 2.000 m³/d

### Effectiveness (of a measure)
- **Effectiveness**: 96.4 %
- **Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.**

### Sludge Treatment
- **Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.**

### Procedures to limit air emissions from Sewage Treatment Plant

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

### 2.2 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

| Remarks | Not applicable |

### 2.2 Contributing scenario controlling consumer exposure for: PC4: Anti-Freeze and de-icing products

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

| Remarks | Not applicable |

### 2.2 Contributing scenario controlling consumer exposure for: PC8: Biocidal products

<table>
<thead>
<tr>
<th>Physical Form (at time of use)</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

| Remarks | Not applicable |

---

**SDS Number:** 100000068203 36/76
### 2.2 Contributing scenario controlling consumer exposure for: PC9a: Coatings and paints, thinners, paint removers

**Product characteristics**
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- Remarks: Not applicable

**Frequency and duration of use**

### 2.2 Contributing scenario controlling consumer exposure for: PC9b: Fillers, putties, plasters, modelling clay

**Product characteristics**
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- Remarks: Not applicable

**Frequency and duration of use**

### 2.2 Contributing scenario controlling consumer exposure for: PC9c: Finger paints

**Product characteristics**
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- Remarks: Not applicable

**Frequency and duration of use**

### 2.2 Contributing scenario controlling consumer exposure for: PC15: Non-metal surface treatment products

**Product characteristics**
- Physical Form (at time of use): Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**SDS Number:** 100000068203
## 2.2 Contributing scenario controlling consumer exposure for: PC18: Ink and toners

**Product characteristics**
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- Remarks: Not applicable

**Frequency and duration of use**

## 2.2 Contributing scenario controlling consumer exposure for: PC23: Leather treatment products

**Product characteristics**
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- Remarks: Not applicable

**Frequency and duration of use**

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

**Product characteristics**
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- Remarks: Not applicable

**Frequency and duration of use**
2.2 Contributing scenario controlling consumer exposure for: PC31: Polishes and wax blends

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling consumer exposure for: PC34: Textile dyes and impregnating products

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

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

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

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

1. Short title of Exposure Scenario: Use as a cleaning agent – industrial

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

SDS Number: 100000068203

39/76
## Sector of use

**SU3**: Industrial Manufacturing (all)

## Process category

- **PROC2**: Use in closed, continuous process with occasional controlled exposure
- **PROC3**: Use in closed batch process (synthesis or formulation)
- **PROC4**: Use in batch and other process (synthesis) where opportunity for exposure arises
- **PROC7**: Industrial spraying
- **PROC8a**: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
- **PROC8b**: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities
- **PROC10**: Roller application or brushing
- **PROC13**: Treatment of articles by dipping and pouring

## Environmental release category

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

## Further information

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

### 2.1 Contributing scenario controlling environmental exposure for: ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)

- **(Msafe)**: 8.410 kg/day

#### Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Factor</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>18,000 m³/d</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
<td>10</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

#### Conditions and measures related to municipal sewage treatment plant

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant</td>
<td>Municipal sewage treatment plant</td>
</tr>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
<td>2,000 m³/d</td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
<td>96,4 %</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>Prevent discharge of undisolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.</td>
</tr>
</tbody>
</table>

#### Conditions and measures related to external treatment of waste for disposal

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

### 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or
### Product characteristics

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

**Frequency and duration of use**

2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Amount used</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Amount used</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Amount used</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Amount used</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
**AlphaPlus® 1-DODECENE**

**Version 5.1**

<table>
<thead>
<tr>
<th><strong>Amount used</strong></th>
<th>Remarks</th>
<th><strong>Frequency and duration of use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remarks</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th>Remarks</th>
<th><strong>Frequency and duration of use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th>Remarks</th>
<th><strong>Frequency and duration of use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th>Remarks</th>
<th><strong>Frequency and duration of use</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td></td>
</tr>
<tr>
<td><strong>Remarks</strong></td>
<td>Not applicable</td>
<td></td>
</tr>
</tbody>
</table>

### 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

**SDS Number:** 100000068203

42/76
**Guidance** is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.

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

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

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

1. **Short title of Exposure Scenario:** Use as a cleaning agent – professional

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</td>
</tr>
<tr>
<td>Process category</td>
<td>PROC2: Use in closed, continuous process with occasional controlled exposure PROC3: Use in closed batch process (synthesis or formulation) PROC4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC10: Roller application or brushing PROC11: Non industrial spraying PROC13: Treatment of articles by dipping and pouring</td>
</tr>
<tr>
<td>Environmental release category</td>
<td>ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems</td>
</tr>
<tr>
<td>Further information</td>
<td>Covers the use as a component of cleaning products including pouring/unloading from drums or containers; and exposures during mixing/diluting in the preparatory phase and cleaning activities (including spraying, brushing, dipping, wiping automated and by hand).</td>
</tr>
</tbody>
</table>

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

Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor),
Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

(Msafe) : 45 kg/day

**Environment factors not influenced by risk management**

| Flow rate | 18.000 m3/d |
| Dilution Factor (River) | 10 |
| Dilution Factor (Coastal Areas) | 100 |
### Conditions and measures related to municipal sewage treatment plant

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant</td>
<td>Municipal sewage treatment plant</td>
</tr>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
<td>2.000 m³/d</td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
<td>96.4%</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.</td>
</tr>
</tbody>
</table>

### Conditions and measures related to external treatment of waste for disposal

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste treatment</td>
<td>External treatment and disposal of waste should comply with applicable local and/or national regulations.</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product characteristics</strong></td>
<td></td>
</tr>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

<table>
<thead>
<tr>
<th>Description</th>
<th>Details</th>
</tr>
</thead>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of
### Product characteristics

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

### Frequency and duration of use

#### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

#### 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

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

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

#### 2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

**Product characteristics**

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature

**SDS Number:** 100000068203
### 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

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

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

### 1. Short title of Exposure Scenario: **Use as a cleaning agent – 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 | PC3: Air care products  
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  
PC24: Lubricants, greases, release products  
PC35: Washing and cleaning products (including solvent based products)  
PC38: Welding and soldering products (with flux coatings or flux cores.), flux products |
| Environmental release category | ERC8a, ERC8d: Wide dispersive indoor use of processing aids in open systems, Wide dispersive outdoor use of processing aids in open systems |
| Further information | Covers general exposures to consumers arising from the use of household products sold as washing and cleaning products, aerosols, coatings, de-icers, lubricants and air care products. |
2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

(Msafe) : 14 kg/day

Environment factors not influenced by risk management
Flow rate : 18,000 m³/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2,000 m³/d
Effectiveness (of a measure) : 96.4 %
Sludge Treatment : Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.
Procedures to limit air emissions from Sewage Treatment Plant :

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

2.2 Contributing scenario controlling consumer exposure for: PC3: Air care products

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used
Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling consumer exposure for: PC4: Anti-Freeze and de-icing products

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used
Remarks : Not applicable
# AlphaPlus® 1-DODECENE

## SAFETY DATA SHEET

**Version 5.1**

**Revision Date 2019-10-01**

### Frequency and duration of use

2.2 Contributing scenario controlling consumer exposure for: **PC8: Biocidal products**

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**

2.2 Contributing scenario controlling consumer exposure for: **PC9a: Coatings and paints, thinners, paint removers**

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**

2.2 Contributing scenario controlling consumer exposure for: **PC9b: Fillers, putties, plasters, modelling clay**

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**

2.2 Contributing scenario controlling consumer exposure for: **PC9c: Finger paints**

---

SDS Number: 100000068203
**AlphaPlus® 1-DODECENE**

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**

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

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**

### 2.2 Contributing scenario controlling consumer exposure for: PC35: Washing and cleaning products

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**

### 2.2 Contributing scenario controlling consumer exposure for: PC38: Welding and soldering products, flux products

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

**Frequency and duration of use**
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

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

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

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

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

1. Short title of Exposure Scenario: **Use in Oil and Gas field drilling and production operations - 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>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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Environmental release category</th>
<th>ERC4: Industrial use of processing aids in processes and products, not becoming part of articles</th>
</tr>
</thead>
</table>

Further information:

Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.

2.1 Contributing scenario controlling environmental exposure for: ERC4: Use of non-reactive processing aid at industrial site (no inclusion into or onto article)
## AlphaPlus® 1-DODECENE

**Version 5.1**

<table>
<thead>
<tr>
<th>(Msafe)</th>
<th>Remarks</th>
<th>Not applicable</th>
</tr>
</thead>
</table>

### Environment factors not influenced by risk management

**Remarks**: Not applicable

### Conditions and measures related to municipal sewage treatment plant

**Sludge Treatment**: Prevent environmental discharge consistent with regulatory requirements.

**Remarks**: Not applicable

### Conditions and measures related to external treatment of waste for disposal

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

**Remarks**: Not applicable

### 2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

#### Product characteristics

**Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks**: Not applicable

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

#### Product characteristics

**Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks**: Not applicable

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

#### Product characteristics

**Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks**: Not applicable
### 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### 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

Discharge to aquatic environment is restricted by law and industry prohibits release.

1. Short title of Exposure Scenario: **Use in Oil and Gas field drilling and production operations – Professional**

SDS Number: 100000068203
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

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

Further information:
- Oil field well drilling and production operations (including drilling muds and well cleaning) including material transfers, on-site formulation, well head operations, shaker room activities and related maintenance.

2.1 Contributing scenario controlling environmental exposure for: ERC8d: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor)

(Msafe) : 
Remarks : Not applicable

Environment factors not influenced by risk management
Remarks : Not applicable

Conditions and measures related to municipal sewage treatment plant
Sludge Treatment : Prevent environmental discharge consistent with regulatory requirements.
Remarks : Not applicable

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

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics
- Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature
# Product characteristics

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

**Remarks:** Not applicable

---

**Frequency and duration of use**

---

## 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
- **Remarks:** Not applicable

---

## 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
- **Remarks:** Not applicable

---

## 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
- **Remarks:** Not applicable

---

## 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

---
AlphaPlus® 1-DODECENE

Amount used
Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

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

Discharge to aquatic environment is restricted by law and industry prohibits release.

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

SDS Number: 100000068203 55/76
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: Use of non-reactive processing aid at industrial site (no inclusion into or onto article), Use of functional fluid at industrial site

(Msafe) : 21.739 kg/day

Environment factors not influenced by risk management
Flow rate : 18.000 m³/d
Dilution Factor (River) : 10
Dilution Factor (Coastal Areas) : 100

Conditions and measures related to municipal sewage treatment plant
Type of Sewage Treatment Plant : Municipal sewage treatment plant
Flow rate of sewage treatment plant effluent : 2.000 m³/d
Effectiveness (of a measure) : 96,4 %
Sludge Treatment : Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.

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

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions
<table>
<thead>
<tr>
<th>Product characteristics</th>
<th>Remarks</th>
<th>Physical Form (at time of use)</th>
<th>Amount used</th>
<th>Remarks</th>
<th>Frequency and duration of use</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
<td></td>
<td>Not applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Contributing scenario controlling worker exposure for: PROC7: Industrial spraying</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

### Product characteristics
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks:** Not applicable

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

### Product characteristics
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks:** Not applicable

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC10: Roller application or brushing

### Product characteristics
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks:** Not applicable

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

### Product characteristics
- **Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

### Amount used
- **Remarks:** Not applicable

### Frequency and duration of use
2.2 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions in metal working operations

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC18: General greasing/lubrication at high kinetic energy conditions

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

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

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

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

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

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

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

<table>
<thead>
<tr>
<th>Main User Groups</th>
<th>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sector of use</td>
<td>SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)</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)</td>
</tr>
</tbody>
</table>

SDS Number: 100000068203  59/76
### 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

- 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

Covers the use of formulated lubricants in closed and open systems including transfer operations, operation of engines and similar articles, reworking on reject articles, equipment maintenance and disposal of waste oil.

### 2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b

Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor), Widespread use of functional fluid (indoor), Widespread use of functional fluid (outdoor)

(Msafe) : 9 kg/day

#### Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Factor</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>18.000 m³/d</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
<td>10</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

#### Conditions and measures related to municipal sewage treatment plant

<table>
<thead>
<tr>
<th>Measure</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant</td>
<td>Municipal sewage treatment plant</td>
</tr>
<tr>
<td>Flow rate of sewage treatment plant effluent</td>
<td>2,000 m³/d</td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
<td>96,4 %</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.</td>
</tr>
</tbody>
</table>

SDS Number: 100000068203
## Conditions and measures related to external treatment of waste for disposal

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

## 2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Form (at time of use)</strong></td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Form (at time of use)</strong></td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Form (at time of use)</strong></td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

### Frequency and duration of use

## 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

<table>
<thead>
<tr>
<th><strong>Product characteristics</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Form (at time of use)</strong></td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Amount used</strong></th>
<th><strong>Remarks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Remarks</strong></td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
### Product characteristics

**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks:** Not applicable

---

### Frequency and duration of use

#### PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

- **Procedure:** PROC8a
- **Remarks:** Not applicable

---

### Frequency and duration of use

#### PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

- **Procedure:** PROC8b
- **Remarks:** Not applicable

---

### Frequency and duration of use

#### PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

- **Procedure:** PROC9
- **Remarks:** Not applicable

---

### Frequency and duration of use

#### PROC10: Roller application or brushing

- **Procedure:** PROC10
- **Remarks:** Not applicable

---

### Frequency and duration of use

#### PROC11: Non-industrial

- **Procedure:** PROC11

---

**SDS Number:** 100000068203
### SAFETY DATA SHEET

**AlphaPlus® 1-DODECENE**  
Version 5.1  
Revision Date 2019-10-01

#### Spraying

**Product characteristics**  
**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**  
**Remarks:** Not applicable

**Frequency and duration of use**

#### 2.2 Contributing scenario controlling worker exposure for: PROC13: Treatment of articles by dipping and pouring

**Product characteristics**  
**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**  
**Remarks:** Not applicable

**Frequency and duration of use**

#### 2.2 Contributing scenario controlling worker exposure for: PROC17: Lubrication at high energy conditions in metal working operations

**Product characteristics**  
**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**  
**Remarks:** Not applicable

**Frequency and duration of use**

#### 2.2 Contributing scenario controlling worker exposure for: PROC18: General greasing/lubrication at high kinetic energy conditions

**Product characteristics**  
**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**  
**Remarks:** Not applicable

**Frequency and duration of use**

#### 2.2 Contributing scenario controlling worker exposure for: PROC20: Use of functional fluids in small devices

**Product characteristics**  
**Physical Form (at time of use):** Liquid, vapour pressure < 0.5 kPa at Standard Temperature

**SDS Number:** 100000068203  
**Page:** 63/76
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

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

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

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

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

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**:
  - PC1: Adhesives, sealants
  - PC24: Lubricants, greases, release products
  - PC31: Polishes and wax blends
- **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.

2.1 Contributing scenario controlling environmental exposure for: ERC8a, ERC8d, ERC9a, ERC9b: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor), Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor), Widespread use of functional fluid (indoor), Widespread use of functional fluid (outdoor)
### Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>18,000 m$^3$/d</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
<td>10</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

### Conditions and measures related to municipal sewage treatment plant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant</td>
<td>Municipal sewage treatment plant</td>
</tr>
<tr>
<td>Flow rate of sewage treatment</td>
<td>2,000 m$^3$/d</td>
</tr>
<tr>
<td>plant effluent</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
<td>96.4 %</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.</td>
</tr>
<tr>
<td>Procedures to limit air emissions from Sewage Treatment Plant</td>
<td></td>
</tr>
</tbody>
</table>

### Conditions and measures related to external treatment of waste for disposal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste treatment</td>
<td>External treatment and disposal of waste should comply with applicable local and/or national regulations.</td>
</tr>
</tbody>
</table>

### 2.2 Contributing scenario controlling consumer exposure for: PC1: Adhesives, sealants

#### Product characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

---

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

#### Product characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount used</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

---
2.2 Contributing scenario controlling consumer exposure for: PC31: Polishes and wax blends

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

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

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

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

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

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

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

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: Use of functional fluid at industrial site

(Msafe) : 32.287 kg/day

Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Factor</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>18,000 m3/d</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
<td>10</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

Conditions and measures related to municipal sewage treatment plant

| Type of Sewage Treatment Plant | Municipal sewage treatment plant |
| Flow rate of sewage treatment plant effluent | 2,000 m3/d |
| Effectiveness (of a measure)   | 96.4 % |
| Sludge Treatment               | Prevent discharge of undissolved substance to or recover from wastewater, Do not apply industrial sludge to natural soils, Sewage sludge should be incinerated, contained or reclaimed. |

Conditions and measures related to external treatment of waste for disposal

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

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

| Physical Form (at time of use) | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

Amount used

Remarks: Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Product characteristics

| Physical Form (at time of use) | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

Amount used
### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks**: Not applicable

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks**: Not applicable

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks**: Not applicable

### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

**Product characteristics**
- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**
- **Remarks**: Not applicable

### Frequency and duration of use
2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

Product characteristics
Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
Remarks : Not applicable

Frequency and duration of use

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

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

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

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 : Transfer of substance or preparation into small containers (dedicated filling line, including weighing) PROC20: Heat and pressure transfer fluids in dispersive, professional use but closed systems |
| Environmental release category | ERC9a, ERC9b: Wide dispersive indoor use of substances in closed systems, Wide dispersive outdoor use of substances in closed systems |
| Further information | |
**AlphaPlus® 1-DODECENE**

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:

Widespread use of functional fluid (indoor), Widespread use of functional fluid (outdoor)

(Msafe) : 18 kg/day

**Environment factors not influenced by risk management**

- Flow rate : 18,000 m3/d
- Dilution Factor (River) : 10
- Dilution Factor (Coastal Areas) : 100

**Conditions and measures related to municipal sewage treatment plant**

- Type of Sewage Treatment Plant : Municipal sewage treatment plant
- Flow rate of sewage treatment plant effluent : 2,000 m3/d
- Effectiveness (of a measure) : 96.4%
- Sludge Treatment : Prevent discharge of undissolved substance to or recover from wastewater, Do not apply industrial sludge to natural soils, Sewage sludge should be incinerated, contained or reclaimed.

**Conditions and measures related to external treatment of waste for disposal**

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

### 2.2 Contributing scenario controlling worker exposure for: PROC1:

Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

**Product characteristics**

- Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- Remarks : Not applicable

**Frequency and duration of use**

### 2.2 Contributing scenario controlling worker exposure for: PROC2:

Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

**Product characteristics**

- Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

SDS Number: 100000068203 70/76
### Remarks

**Not applicable**

#### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

**Product characteristics**

- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks**: Not applicable

#### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities

**Product characteristics**

- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks**: Not applicable

#### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC9: Transfer of substance or mixture into small containers (dedicated filling line, including weighing)

**Product characteristics**

- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks**: Not applicable

#### Frequency and duration of use

### 2.2 Contributing scenario controlling worker exposure for: PROC20: Use of functional fluids in small devices

**Product characteristics**

- **Physical Form (at time of use)**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

**Amount used**

- **Remarks**: Not applicable

#### Frequency and duration of use
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

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

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

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

   Main User Groups: SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites
   Sector of use: SU3, SU 10: Industrial Manufacturing (all), Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)
   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
                 PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)
                 PROC6: Calendering operations
                 PROC8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities
                 PROC8b: Transfer of substance or preparation (charging/discharging) from/to vessels/ large containers at dedicated facilities
                 PROC14: Production of mixtures or articles by tabletting, compression, extrusion, pelletization; Industrial setting;
                 PROC15: Use as laboratory reagent

   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: Use of non-reactive processing aid at industrial site (no inclusion into or onto article), Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article)

(Msafe) = 42.735 kg/day

Environment factors not influenced by risk management

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate</td>
<td>18.000 m³/d</td>
</tr>
<tr>
<td>Dilution Factor (River)</td>
<td>10</td>
</tr>
<tr>
<td>Dilution Factor (Coastal Areas)</td>
<td>100</td>
</tr>
</tbody>
</table>

Conditions and measures related to municipal sewage treatment plant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Sewage Treatment Plant</td>
<td>Municipal sewage treatment plant</td>
</tr>
<tr>
<td>Flow rate of sewage treatment</td>
<td>2.000 m³/d</td>
</tr>
<tr>
<td>plant effluent</td>
<td></td>
</tr>
<tr>
<td>Effectiveness (of a measure)</td>
<td>96,4 %</td>
</tr>
<tr>
<td>Sludge Treatment</td>
<td>Prevent discharge of undissolved substance to or recover from wastewater., Do not apply industrial sludge to natural soils., Sewage sludge should be incinerated, contained or reclaimed.</td>
</tr>
</tbody>
</table>

Conditions and measures related to external treatment of waste for disposal

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste treatment</td>
<td>External treatment and disposal of waste should comply with applicable local and/or national regulations.</td>
</tr>
</tbody>
</table>

2.2 Contributing scenario controlling worker exposure for: PROC1: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions

Product characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

Amount used

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC2: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions

Product characteristics

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

Amount used

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

Frequency and duration of use
2.2 Contributing scenario controlling worker exposure for: PROC3: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition

Product characteristics
  Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
  Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC4: Chemical production where opportunity for exposure arises

Product characteristics
  Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
  Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC5: Mixing or blending in batch processes

Product characteristics
  Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
  Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC6: Calendering operations

Product characteristics
  Physical Form (at time of use) : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

Amount used
  Remarks : Not applicable

Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC8a: Transfer of
## Substance or mixture (charging/discharging) at non dedicated-facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC8b: Transfer of substance or mixture (charging/discharging) at dedicated facilities

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC14: Tabletting, compression, extrusion, peletisation, granulation

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

2.2 Contributing scenario controlling worker exposure for: PROC15: Use as laboratory reagent

<table>
<thead>
<tr>
<th>Product characteristics</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Form (at time of use)</td>
<td>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
<tr>
<td>Amount used</td>
<td></td>
</tr>
<tr>
<td>Remarks</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

### Frequency and duration of use

3. Exposure estimation and reference to its source

SDS Number:100000068203
4. Guidance to Downstream User to evaluate whether he works inside the boundaries set by the Exposure Scenario

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

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