SAFETY DATA SHEET

AlphaPlus® 1-Decene

Version 2.9


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

1.1

Product information

Product Name: AlphaPlus® 1-Decene
Material: 1095875, 1068252, 1037000, 1015428, 1036999

EC-No.Registration number

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Legal Entity</th>
<th>Registration number</th>
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<tbody>
<tr>
<td>1-Decene</td>
<td>872-05-9</td>
<td>212-819-2</td>
<td>Chevron Phillips Chemical Company LP</td>
<td>01-2119486878-12-0006</td>
</tr>
</tbody>
</table>

1.2

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

Relevant Identified Uses: Manufacture
Use as an intermediate
Use in coatings – industrial
Use in coatings – professional
Use in Coatings - Consumer
Use in Oil and Gas field drilling and production operations - Industrial
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

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

SDS Requests: (800) 852-5530

SDS Number:100000068089

1/85
AlphaPlus® 1-Decene

Technical Information: (832) 813-4862
Responsible Party: Product Safety Group
Email: sds@cpchem.com

1.4 Emergency telephone:

Health:
866.442.9628 (North America)
1.832.813.4984 (International)

Transport:
CHEMTREC 800.424.9300 or 703.527.3887 (int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431

Responsible Department: Product Safety and Toxicology Group
E-mail address: SDS@CPChem.com
Website: www.CPChem.com

SECTION 2: Hazards identification

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

Flammable liquids, Category 3
Aspiration hazard, Category 1
Short-term (acute) aquatic hazard, Category 1
Long-term (chronic) aquatic hazard, Category 1

H226: Flammable liquid and vapor.
H304: May be fatal if swallowed and enters airways.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

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

Signal Word: Danger

Hazard pictograms:

Hazard Statements:

H226 Flammable liquid and vapor.
H304 May be fatal if swallowed and enters airways.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements:

Prevention:
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P243 Take precautionary measures against static discharge.
P273 Avoid release to the environment.
AlphaPlus® 1-Decene

SECTION 3: Composition/information on ingredients

3.1 - 3.2 Substance or Mixture

Synonyms:
- Decene-n-1
- NAO 10
- Decene-1 (C10)
  (C10 H20)

Molecular formula: C10H20

Hazardous ingredients

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Classification (REGULATION (EC) No 1272/2008)</th>
<th>Concentration [wt%]</th>
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<tr>
<td>1-Decene</td>
<td>872-05-9</td>
<td>212-819-2</td>
<td>Flam. Liq. 3; H226 Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410</td>
<td>96 - 100</td>
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<td>2-Butyl-1-Hexene</td>
<td>6795-79-5</td>
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<td>2-Ethyl-1-Octene</td>
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<td>Flam. Liq. 3; H226 Asp. Tox. 1; H304</td>
<td>1 - 5</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. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

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. Do NOT induce vomiting. Do not give milk or alcoholic beverages. 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: 49°C (120°F)

Autoignition temperature: 210°C (410°F)

5.1 Extinguishing media

Suitable extinguishing media: Alcohol-resistant foam. Carbon dioxide (CO2). Dry chemical.

Unsuitable extinguishing media: High volume water jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire fighting: Do not allow run-off from fire fighting to enter drains or water courses.

5.3 Advice for firefighters

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

Further information: Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. 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. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products: Carbon oxides.

**SECTION 6: Accidental release measures**

6.1 Personal precautions, protective equipment and emergency procedures
### Personal precautions
Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

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

### Methods and materials for containment and 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).

### Reference to other sections
For personal protection see section 8. For disposal considerations see section 13.

### SECTION 7: Handling and storage

#### 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. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. 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. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

#### 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. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.
SECTION 8: Exposure controls/personal protection

8.1 Control parameters

- **PNEC**
  - **Fresh water**
    - **Value**: 0.0012 mg/l
  - **Sea water**
    - **Value**: 0.0012 mg/l
  - **Fresh water sediment**
    - **Value**: 2.14 mg/kg
  - **Sea sediment**
    - **Value**: 2.14 mg/kg
  - **Soil**
    - **Value**: 0.43 mg/kg

8.2 Exposure controls

**Personal protective equipment**

- **Hand protection**: The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- **Eye protection**: Eye wash bottle with pure water. Tightly fitting safety goggles.
- **Skin and body protection**: Impervious clothing. Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- **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**: 49°C (120°F)
- **Lower explosion limit**: 0.7 % (V)
- **Upper explosion limit**: 5.9 % (V)
AlphaPlus® 1-Decene

Oxidizing properties : no

Autoignition temperature : 210°C (410°F)

Thermal decomposition : No data available

Molecular formula : C10H20

Molecular weight : 140.3 g/mol

pH : Not applicable

Freezing point : -66°C (-87°F)

Pour point : No data available

Boiling point/boiling range : 170.56°C (339.01°F)

Vapor pressure : 0.21 kPa
at 25°C (77°F)

2.30 kPa
at 65°C (149°F)

Relative density : 0.75
at 15.6°C (60.1°F)

Density : 745 kg/m³
at 15°C (59°F)

740 kg/m³
at 20°C (68°F)

717 kg/m³
at 50°C (122°F)

Water solubility : Soluble in hydrocarbon solvents; insoluble in water.

Partition coefficient: n-octanol/water : No data available

Viscosity, kinematic : 1.1 cSt
at 20°C (68°F)

Relative vapor density : 4.84
(Air = 1.0)

Evaporation rate : No data available

SECTION 10: Stability and reactivity

10.1
Reactivity: Stable at normal ambient temperature and pressure.

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: Hazardous polymerization does not occur.
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

Thermal decomposition: No data available

10.6

Hazardous decomposition products: Carbon oxides

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

SECTION 11: Toxicological information

11.1

Information on toxicological effects

Acute oral toxicity
1-Decene: LD50: > 3.575 mg/kg
Species: Rat
Sex: male and female
Method: Fixed Dose Method
Information given is based on data obtained from similar substances.

Acute inhalation toxicity
1-Decene: LC50: > 2,1 mg/l
Exposure time: 4 h
Species: Rat
Sex: male and female
Method: OECD Test Guideline 403
Information given is based on data obtained from similar substances. Not classified due to data which are conclusive although insufficient for classification.

**Acute dermal toxicity**
1-Decene: LD50: > 2.000 mg/kg  
Species: Rat  
Sex: male and female  
Method: OECD Test Guideline 402  
Information given is based on data obtained from similar substances.

**Skin irritation**
1-Decene: Repeated or prolonged contact with the mixture may cause removal of natural fat from the skin resulting in desiccation of the skin.

**Eye irritation**
1-Decene: No eye irritation

**Sensitization**
1-Decene: Did not cause sensitization on laboratory animals. Information given is based on data obtained from similar substances.

**Repeated dose toxicity**
1-Decene: Species: Rat, Male and female  
Sex: Male and female  
Application Route: Oral  
Dose: 0, 100, 500, 1000 mg/kg  
Exposure time: 13 wks  
Number of exposures: 7 d/wk  
NOEL: 1.000 mg/kg  
Method: OECD Guideline 408  
Information given is based on data obtained from similar substances.  
Species: Rat, Male and female  
Sex: Male and female  
Application Route: Inhalation  
Dose: 0, 300, 1000, 3000 ppm  
Exposure time: 13 wks  
Number of exposures: 6 hr/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-Decene: Test Type: Ames test  
Metabolic activation: with and without metabolic activation  
Method: Mutagenicity (Escherichia coli - reverse mutation

SDS Number:100000068089  
9/85
Genotoxicity in vivo

1-Decene : Test Type: Micronucleus test
Species: Mouse
Method: Mutagenicity (micronucleus test)
Result: negative

Reproductive toxicity

1-Decene : Species: Rat
Sex: male
Application Route: Oral diet
Dose: 0, 100, 500, 1000 mg/kg
Method: OECD Guideline 421
NOAEL Parent: 1.000 mg/kg
NOAEL F1: 1.000 mg/kg

AlphaPlus® 1-Decene

Aspiration toxicity : May be fatal if swallowed and enters airways. Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

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

AlphaPlus® 1-Decene

Further information : Solvents may degrease the skin.

SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish
1-Decene: LC50: 0.12 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
semi-static test Method: OECD Test Guideline 203
Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates
1-Decene: EC50: 0.56 - 1 mg/l
Exposure time: 48 h
Species: Daphnia
Method: OECD Test Guideline 202

Toxicity to algae
1-Decene: EC50: 1 - 1.8 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (microalgae)
Method: OECD Test Guideline 201

M-Factor dec-1-ene: M-Factor (Acute Aquat. Tox.) 1
M-Factor (Chron. Aquat. Tox.) 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
1-Decene: NOEC: 0.0194 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Analytical monitoring: yes
Test substance: yes
Method: OECD Test Guideline 211

12.2 Persistence and degradability
Biodegradability: This material is expected to be readily biodegradable.

12.3 Bioaccumulative potential
Elimination information (persistence and degradability)
Bioaccumulation
1-Decene: No data available

12.4 Mobility in soil
Mobility
1-Decene: No data available
12.5 Results of PBT and vPvB assessment

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

12.6 Other adverse effects

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life with long lasting effects.

Ecotoxicology Assessment

Short-term (acute) aquatic hazard
1-Decene : Very toxic to aquatic life.

Long-term (chronic) aquatic hazard
1-Decene : Very toxic to aquatic life with long lasting effects.

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.

Product : The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

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

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., 3, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III, (49°C), MARINE POLLUTANT, (1-DECENE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III, (D/E), ENVIRONMENTALLY HAZARDOUS, (1-DECENE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III, ENVIRONMENTALLY HAZARDOUS, (1-DECENE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III, ENVIRONMENTALLY HAZARDOUS, (1-DECENE)

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

Other information : Decene (N), S. T. 2, CAT. X

SECTION 15: Regulatory information

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

Water contaminating class : WGK 3 highly water endangering
(Germany)

15.2 Chemical Safety Assessment
Components : dec-1-ene
A Chemical Safety Assessment has been carried out for this substance.
212-819-2

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Version 2.9

Revision Date 2020-03-03

Major Accident Hazard Legislation
- 96/82/EC Update: 2003
  - Flammable.
  - Quantity 1: 5.000 t
  - Quantity 2: 50.000 t

- 96/82/EC Update: 2003
  - Dangerous for the environment
  - Quantity 1: 100 t
  - Quantity 2: 200 t

- 96/82/EC Update: 2003
  - Flammable.
  - Quantity 1: 5.000 t
  - Quantity 2: 50.000 t

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

SECTION 16: Other information

NFPA Classification
- Health Hazard: 0
- Fire Hazard: 2
- Reactivity Hazard: 0

Further information
- Legacy SDS Number: PE0018

SDS Number: 1000000068089  14/85
SAFETY DATA SHEET

AlphaPlus® 1-Decene

Version 2.9

Revision Date 2020-03-03

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>
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<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
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<tr>
<td>LD50</td>
<td>Lethal Dose 50%</td>
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<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
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<tr>
<td>LOAEL</td>
<td>Lowest Observed Adverse Effect Level</td>
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<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
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<td>NFPA</td>
<td>National Fire Protection Agency</td>
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<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
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<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
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<td>CNS</td>
<td>Central Nervous System</td>
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<td>NTP</td>
<td>National Toxicology Program</td>
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<td>CAS</td>
<td>Chemical Abstract Service</td>
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<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
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<td>EC50</td>
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<td>EOSCA Generic Exposure Scenario Tool</td>
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<td>EOSCA</td>
<td>European Oilfield Speciality Chemicals Association</td>
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<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
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<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
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<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
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<td>PRNT</td>
<td>Presumed Not Toxic</td>
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<td>GHS</td>
<td>Globally Harmonized System</td>
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<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
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<td>STEL</td>
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<td>Inhibition Concentration 50%</td>
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<td>SARA</td>
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<td>TLV</td>
<td>Threshold Limit Value</td>
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<td>IARC</td>
<td>International Agency for Research on Cancer</td>
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<td>TWA</td>
<td>Time Weighted Average</td>
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<td>TSCA</td>
<td>Toxic Substance Control Act</td>
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<td>KECS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
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<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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Full text of H-Statements referred to under sections 2 and 3.

H226 Flammable liquid and vapor.
H304 May be fatal if swallowed and enters airways.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.
Annex: Exposure Scenarios

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<td>Use as an intermediate; Industrial uses (SU3).</td>
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<td>ES 3</td>
<td>Formulation; Industrial uses (SU3).</td>
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<tr>
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<td>Use in coatings – industrial; Industrial uses (SU3).</td>
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<td>ES 5</td>
<td>Use in coatings – professional; Professional uses (SU22).</td>
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<td>ES 6</td>
<td>Use in Coatings - Consumer; Consumer uses (SU21).</td>
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<td>ES 7</td>
<td>Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).</td>
</tr>
<tr>
<td>ES 8</td>
<td>Use in polymer production – industrial; Industrial uses (SU3).</td>
</tr>
</tbody>
</table>
## 1.1. Title section

**Exposure Scenario name**: Manufacture

**Structured Short Title**: Manufacture; Industrial uses (SU3).

**Substance**: dec-1-ene  
EC-No.: 212-819-2

### Environment

<table>
<thead>
<tr>
<th>CS 1</th>
<th>Manufacture</th>
<th>ERC1, ERC4</th>
</tr>
</thead>
</table>

### Worker

<table>
<thead>
<tr>
<th>CS 2</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
<th>PROC1</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS 3</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
<td>PROC2</td>
</tr>
<tr>
<td>CS 4</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
<td>PROC3</td>
</tr>
<tr>
<td>CS 5</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
<td>PROC4</td>
</tr>
<tr>
<td>CS 6</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
<td>PROC8a</td>
</tr>
<tr>
<td>CS 7</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
<td>PROC8b</td>
</tr>
<tr>
<td>CS 8</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
<td>PROC15</td>
</tr>
</tbody>
</table>

### 1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Manufacture of the substance (ERC1) / Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

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

- **Maximum allowable site tonnage (MSafe)**: 352,467 kg/day
- **Release type**: Continuous release
- **Emission days**: 300

### Technical and organisational conditions and measures

SDS Number: 100000068089 18/85
Risk from environmental exposure is driven by freshwater.
Air - minimum efficiency of 90 %
Water - minimum efficiency of 97.4 %

### Conditions and measures related to sewage treatment plant

<table>
<thead>
<tr>
<th>STP type</th>
<th>Municipal sewage treatment plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP 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>STP effluent</td>
<td>2.000 m3/d</td>
</tr>
</tbody>
</table>

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

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

### Other conditions affecting environmental exposure

<table>
<thead>
<tr>
<th>Receiving surface water flow</th>
<th>18.000 m3/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local freshwater dilution factor</td>
<td>40</td>
</tr>
<tr>
<td>Local marine water dilution factor</td>
<td>100</td>
</tr>
</tbody>
</table>

1.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Product (article) characteristics

| Physical form of product        | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration                        | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

| Temperature                     | Assumes use at not more than 20°C above ambient temperature. |
# AlphaPlus® 1-Decene

## Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

### Product (article) characteristics

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
- No other specific measures identified.

### Other conditions affecting workers exposure

- Temperature: Assumes use at not more than 20°C above ambient temperature.

## Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

### Product (article) characteristics

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
- No other specific measures identified.

### Other conditions affecting workers exposure

- Temperature: Assumes use at not more than 20°C above ambient temperature.
### 1.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

#### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

#### Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

### 1.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

#### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

#### Other conditions affecting workers exposure
## AlphaPlus® 1-Decene

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#### Temperature
- Assumes use at not more than 20°C above ambient temperature.

### 1.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

#### Product (article) characteristics
- Covers percentage substance in the product up to 100%.

#### Physical form of product
- Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

#### Amount used (or contained in articles), frequency and duration of use/exposure
- Duration: Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures
- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure
- Temperature: Assumes use at not more than 20°C above ambient temperature.

### 1.2.8. Control of worker exposure: Use as laboratory reagent (PROC15)

#### Product (article) characteristics
- Covers percentage substance in the product up to 100%.

#### Physical form of product
- Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

#### Amount used (or contained in articles), frequency and duration of use/exposure
- Duration: Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures
- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure
1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Manufacture of the substance (ERC1) / Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.795 µg/l (EUSES)</td>
<td>0.662</td>
</tr>
<tr>
<td>Sea water</td>
<td>0.302 µg/l (EUSES)</td>
<td>0.252</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0.306 mg/kg wet weight (EUSES)</td>
<td>0.658</td>
</tr>
<tr>
<td>Sea sediment</td>
<td>0.116 mg/kg wet weight (EUSES)</td>
<td>0.250</td>
</tr>
<tr>
<td>Soil</td>
<td>0.0117 mg/kg wet weight (EUSES)</td>
<td>0.301</td>
</tr>
<tr>
<td>Air</td>
<td>0.0649 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**Additional information on exposure estimation**

Common practices vary across sites thus conservative process release estimates used.

1.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

1.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

1.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

1.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.
1.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated-facilities (PROC8a)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

1.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

1.3.8. Worker exposure: Use as laboratory reagent (PROC15)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

1.4. **Guidance to DU to evaluate whether he works inside the boundaries set by the ES**

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).
## ES 2: Use as an intermediate; Industrial uses (SU3).

### 2.1. Title section

<table>
<thead>
<tr>
<th>Exposure Scenario name</th>
<th>: Use as an intermediate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured Short Title</td>
<td>: Use as an intermediate; Industrial uses (SU3).</td>
</tr>
<tr>
<td>Substance</td>
<td>: dec-1-ene</td>
</tr>
<tr>
<td></td>
<td>EC-No.: 212-819-2</td>
</tr>
</tbody>
</table>

### Environment

<table>
<thead>
<tr>
<th>CS</th>
<th>Use as an intermediate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC1</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC3</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC4</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC8a</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC8b</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PROC15</td>
<td></td>
</tr>
</tbody>
</table>

### 2.2. Conditions of use affecting exposure

#### 2.2.1. Control of environmental exposure: Use of intermediate (ERC6a)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

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

| Maximum allowable site tonnage (MSafe) | 51.813 kg/day |
| Release type                          | Continuous release |
| Emission days                         | 300 |

### Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.

SDS Number: 100000068089
### AlphaPlus® 1-Decene

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**Revision Date** 2020-03-03

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<table>
<thead>
<tr>
<th><strong>Conditions and measures related to sewage treatment plant</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STP type</strong></td>
</tr>
<tr>
<td><strong>STP sludge treatment</strong></td>
</tr>
<tr>
<td><strong>STP effluent</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Conditions and measures related to treatment of waste (including article waste)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waste treatment</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Other conditions affecting environmental exposure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Receiving surface water flow</strong></td>
</tr>
<tr>
<td><strong>Local freshwater dilution factor</strong></td>
</tr>
<tr>
<td><strong>Local marine water dilution factor</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>2.2.2. Control of worker exposure:</strong> Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th><strong>Product (article) characteristics</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Covers percentage substance in the product up to 100 %</strong></td>
</tr>
<tr>
<td><strong>Physical form of product</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Amount used (or contained in articles), frequency and duration of use/exposure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Technical and organisational conditions and measures</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Other conditions affecting workers exposure</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong></td>
</tr>
</tbody>
</table>

---

**SDS Number:** 100000068089
## Control of worker exposure

### PROC2

**Product (article) characteristics**

Covers percentage substance in the product up to 100%.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

**Technical and organisational conditions and measures**

- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

### PROC3

**Product (article) characteristics**

Covers percentage substance in the product up to 100%.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

**Technical and organisational conditions and measures**

- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.
### 2.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

**Product (article) characteristics**

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting workers exposure**

| Temperature | Assumes use at not more than 20°C above ambient temperature |

### 2.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

**Product (article) characteristics**

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting workers exposure**
### 2.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

<table>
<thead>
<tr>
<th>Physical form of product</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

#### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

#### Other conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumes use at not more than 20°C above ambient temperature</th>
</tr>
</thead>
</table>

### 2.2.8. Control of worker exposure: Use as laboratory reagent (PROC15)

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

<table>
<thead>
<tr>
<th>Physical form of product</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

#### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

#### Other conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumes use at not more than 20°C above ambient temperature</th>
</tr>
</thead>
</table>
2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Use of intermediate (ERC6a)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.433 µg/l (EUSES)</td>
<td>0.361</td>
</tr>
<tr>
<td>Sea water</td>
<td>0.0426 µg/l (EUSES)</td>
<td>0.036</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0.167 mg/kg wet weight (EUSES)</td>
<td>0.359</td>
</tr>
<tr>
<td>Sea sediment</td>
<td>0.0164 mg/kg wet weight (EUSES)</td>
<td>0.035</td>
</tr>
<tr>
<td>Soil</td>
<td>0.220 mg/kg wet weight (EUSES)</td>
<td>0.579</td>
</tr>
<tr>
<td>Air</td>
<td>0.0017 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

**Additional information on exposure estimation**

Common practices vary across sites thus conservative process release estimates used.

2.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

2.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

2.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

2.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.
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### 2.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated-facilities (PROC8a)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

### 2.3.8. Worker exposure: Use as laboratory reagent (PROC15)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

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

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).
AlphaPlus® 1-Decene

Version 2.9

Revision Date 2020-03-03

ES 3: Formulation; Industrial uses (SU3).

3.1. Title section

Exposure Scenario name: Formulation

Structured Short Title: Formulation; Industrial uses (SU3).

Substance: dec-1-ene

EC-No.: 212-819-2

Environment

CS 1 Formulation

Worker

CS 2 General measures applicable to all activities, General measures (skin irritants)

CS 3 General measures applicable to all activities, General measures (skin irritants)

CS 4 General measures applicable to all activities, General measures (skin irritants)

CS 5 General measures applicable to all activities, General measures (skin irritants)

CS 6 General measures applicable to all activities, General measures (skin irritants)

CS 7 General measures applicable to all activities, General measures (skin irritants)

CS 8 General measures applicable to all activities, General measures (skin irritants)

CS 9 General measures applicable to all activities, General measures (skin irritants)

CS 10 General measures applicable to all activities, General measures (skin irritants)

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Formulation into mixture (ERC2)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

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

Maximum allowable site tonnage (MSafe): 91.503 kg/day

Release type: Continuous release

SDS Number: 100000068089 32/85
## AlphaPlus® 1-Decene

**Version 2.9**

**Revision Date 2020-03-03**

### Emission days

| Emission days | 300 |

### Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.
- **Air** - minimum efficiency of 0%
- **Water** - minimum efficiency of 97.4%

### Conditions and measures related to sewage treatment plant

| STP type | Municipal sewage treatment plant |
| STP 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. |
| STP effluent | 2.000 m3/d |

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

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

### Other conditions affecting environmental exposure

| Receiving surface water flow | 18.000 m3/d |
| Local freshwater dilution factor | 10 |
| Local marine water dilution factor | 100 |

### 3.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

**Product (article) characteristics**

Covers percentage substance in the product up to 100 %.

- **Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance.
Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

### Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient |

SDS Number:100000068089 33/85
3.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Product (article) characteristics

Covers percentage substance in the product up to 100%.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration: Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

Temperature: Assumes use at not more than 20°C above ambient temperature.

3.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Product (article) characteristics

Covers percentage substance in the product up to 100%.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration: Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
## Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

### 3.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

### 3.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

3.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

3.2.8. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

3.2.9. Control of worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

3.2.10. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Formulation into mixture (ERC2)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0,0005 mg/l (EUSES)</td>
<td>0,414</td>
</tr>
<tr>
<td>Sea water</td>
<td>0,049 µg/l (EUSES)</td>
<td>0,041</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0,191 mg/kg wet weight (EUSES)</td>
<td>0,412</td>
</tr>
<tr>
<td>Sea sediment</td>
<td>0,019 mg/kg wet weight (EUSES)</td>
<td>0,041</td>
</tr>
<tr>
<td>Soil</td>
<td>0,290 mg/kg wet weight (EUSES)</td>
<td>0,765</td>
</tr>
<tr>
<td>Air</td>
<td>0,195 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.

3.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

3.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

3.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

3.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.
3.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

3.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

3.3.8. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

3.3.9. Worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

3.3.10. Worker exposure: Use as laboratory reagent (PROC15)

<table>
<thead>
<tr>
<th>Additional information on exposure estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td>A quantitative risk assessment is not required for human health.</td>
</tr>
</tbody>
</table>

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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).
## ES 4: Use in coatings – industrial; Industrial uses (SU3).

### 4.1. Title section

<table>
<thead>
<tr>
<th>Exposure Scenario name</th>
<th>Use in coatings – industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured Short Title</td>
<td>Use in coatings – industrial; Industrial uses (SU3).</td>
</tr>
<tr>
<td>Substance</td>
<td>dec-1-ene EC-No.: 212-819-2</td>
</tr>
</tbody>
</table>

### Environment

| CS 1 | Use in coatings – industrial |

### Worker

| CS 2 | General measures applicable to all activities, General measures (skin irritants) |
| CS 3 | General measures applicable to all activities, General measures (skin irritants) |
| CS 4 | General measures applicable to all activities, General measures (skin irritants) |
| CS 5 | General measures applicable to all activities, General measures (skin irritants) |
| CS 6 | General measures applicable to all activities, General measures (skin irritants) |
| CS 7 | General measures applicable to all activities, General measures (skin irritants) |
| CS 8 | General measures applicable to all activities, General measures (skin irritants) |
| CS 9 | General measures applicable to all activities, General measures (skin irritants) |
| CS 10 | General measures applicable to all activities, General measures (skin irritants) |
| CS 11 | General measures applicable to all activities, General measures (skin irritants) |
| CS 12 | General measures applicable to all activities, General measures (skin irritants) |
| CS 13 | General measures applicable to all activities, General measures (skin irritants) |
| CS 14 | General measures applicable to all activities, General measures (skin irritants) |

### 4.2. Conditions of use affecting exposure

#### 4.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)
**AlphaPlus® 1-Decene**

**Version 2.9**  
**Revision Date 2020-03-03**

### Product (article) characteristics
Covers percentage substance in the product up to 100%.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum allowable site tonnage (MSafe)</td>
<td>19.491 kg/day</td>
</tr>
<tr>
<td>Release type</td>
<td>Continuous release</td>
</tr>
<tr>
<td>Emission days</td>
<td>300</td>
</tr>
</tbody>
</table>

### Technical and organisational conditions and measures

**Risk from environmental exposure is driven by soil.**  
**Air - minimum efficiency of 90 %**  
**Water - minimum efficiency of 97,4 %**

### Conditions and measures related to sewage treatment plant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP type</td>
<td>Municipal sewage treatment plant</td>
</tr>
</tbody>
</table>
| STP 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. |
| STP effluent                        | 2,000 m3/d                                 |

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

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

### Other conditions affecting environmental exposure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving surface water flow</td>
<td>18,000 m3/d</td>
</tr>
<tr>
<td>Local freshwater dilution factor</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor</td>
<td>100</td>
</tr>
</tbody>
</table>

### 4.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Product (article) characteristics
Covers percentage substance in the product up to 100%.

**Physical form of product**  
Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Covers daily exposures up to 8 hours</td>
</tr>
</tbody>
</table>

### Technical and organisational conditions and measures

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**Version 2.9**

**Revision Date 2020-03-03**

---

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

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

#### Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

---

### 4.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

| Duration | Covers daily exposures up to 8 hours |

---

### Technical and organisational conditions and measures

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

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

#### Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

---

### 4.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

| Duration | Covers daily exposures up to 8 hours |

---

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# AlphaPlus® 1-Decene

**SAFETY DATA SHEET**

## Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

## Other conditions affecting workers exposure

**Temperature**: Assumes use at not more than 20°C above ambient temperature.

## 4.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**: Covers daily exposures up to 8 hours

## Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

## Other conditions affecting workers exposure

**Temperature**: Assumes use at not more than 20°C above ambient temperature.

## 4.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**: Covers daily exposures up to 8 hours
### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

### 4.2.7. Control of worker exposure: Industrial spraying (PROC7)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

**Physical form of product**

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**

Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

### 4.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

**Physical form of product**

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**

Covers daily exposures up to 8 hours
# AlphaPlus® 1-Decene

## Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

Temperature

Assumes use at not more than 20°C above ambient temperature.

## 4.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure.

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

Duration

Covers daily exposures up to 8 hours.

## Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

Temperature

Assumes use at not more than 20°C above ambient temperature.

## 4.2.10. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure.

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

Duration

Covers daily exposures up to 8 hours.
### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

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

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**

Covers daily exposures up to 8 hours

#### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

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

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**

Covers daily exposures up to 8 hours
## Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**: Assumes use at not more than 20°C above ambient temperature.

### 4.2.13. Control of worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**: Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**: Assumes use at not more than 20°C above ambient temperature.

### 4.2.14. Control of worker exposure: Use as laboratory reagent (PROC15)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**: Covers daily exposures up to 8 hours
## Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

## Other conditions affecting workers exposure

| Temperature | Assists use at not more than 20°C above ambient temperature. |

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

**4.3.1. Environmental release and exposure:** Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0,334 µg/l (EUSES)</td>
<td>0,278</td>
</tr>
<tr>
<td>Sea water</td>
<td>0,0326 µg/l (EUSES)</td>
<td>0,027</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0,129 mg/kg wet weight (EUSES)</td>
<td>0,276</td>
</tr>
<tr>
<td>Sea sediment</td>
<td>0,0126 mg/kg wet weight (EUSES)</td>
<td>0,027</td>
</tr>
<tr>
<td>Soil</td>
<td>0,216 mg/kg wet weight (EUSES)</td>
<td>0,570</td>
</tr>
<tr>
<td>Air</td>
<td>0,303 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

### Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.

#### 4.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

#### 4.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.
4.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.7. Worker exposure: Industrial spraying (PROC7)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.10. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

4.3.11. Worker exposure: Roller application or brushing (PROC10)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.
4.3.12. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.

4.3.13. Worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.

4.3.14. Worker exposure: Use as laboratory reagent (PROC15)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.

4.4. **Guidance to DU to evaluate whether he works inside the boundaries set by the ES**

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).
5.2. Conditions of use affecting exposure

5.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)
### Product (article) characteristics

Covers percentage substance in the product up to 100%.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum allowable site tonnage (MSafe)</td>
<td>52 kg/day</td>
</tr>
<tr>
<td>Release type</td>
<td>Wide dispersive use</td>
</tr>
<tr>
<td>Emission days</td>
<td>300</td>
</tr>
</tbody>
</table>

### Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.
Air - minimum efficiency of 0%
Water - minimum efficiency of 97.4%

### Conditions and measures related to sewage treatment plant

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP type</td>
<td>Municipal sewage treatment plant</td>
</tr>
<tr>
<td>STP 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>STP effluent</td>
<td>2,000 m³/d</td>
</tr>
</tbody>
</table>

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

<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>

### Other conditions affecting environmental exposure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving surface water flow</td>
<td>18,000 m³/d</td>
</tr>
<tr>
<td>Local freshwater dilution factor</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor</td>
<td>100</td>
</tr>
</tbody>
</table>

5.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Covers daily exposures up to 8 hours</td>
</tr>
</tbody>
</table>

### Technical and organisational conditions and measures

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**SAFETY DATA SHEET**

**AlphaPlus® 1-Decene**

Version 2.9

Revision Date 2020-03-03

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Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting workers exposure**

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

---

5.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

**Product (article) characteristics**

| Covers percentage substance in the product up to 100 %. |
| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

---

5.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

**Product (article) characteristics**

| Covers percentage substance in the product up to 100 %. |
| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

---

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**Version 2.9**

**Revision Date 2020-03-03**

<table>
<thead>
<tr>
<th>Technical and organisational conditions and measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other conditions affecting workers exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature : Assumes use at not more than 20°C above ambient temperature.</td>
</tr>
</tbody>
</table>

**5.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)**

<table>
<thead>
<tr>
<th>Product (article) characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 100 %.</td>
</tr>
<tr>
<td>Physical form of product : Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used (or contained in articles), frequency and duration of use/exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration : Covers daily exposures up to 8 hours</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical and organisational conditions and measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Other conditions affecting workers exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature : Assumes use at not more than 20°C above ambient temperature.</td>
</tr>
</tbody>
</table>

**5.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)**

<table>
<thead>
<tr>
<th>Product (article) characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 100 %.</td>
</tr>
<tr>
<td>Physical form of product : Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used (or contained in articles), frequency and duration of use/exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration : Covers daily exposures up to 8 hours</td>
</tr>
</tbody>
</table>

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**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting workers exposure**

Temperature : Assumesh using at not more than 20°C above ambient temperature.

5.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

**Product (article) characteristics**

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

5.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

**Product (article) characteristics**

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

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**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting workers exposure**

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

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

**Product (article) characteristics**

Covers percentage substance in the product up to 100 %.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting workers exposure**

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

5.2.10. Control of worker exposure: Non-industrial spraying (PROC11)

**Product (article) characteristics**

Covers percentage substance in the product up to 100 %.

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |
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Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

5.2.11. Control of worker exposure: Treatment of articles by dipping and pouring (PROC13)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

5.2.12. Control of worker exposure: Use as laboratory reagent (PROC15)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

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Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

Other conditions affecting workers exposure

Temperature : Assumess use at not more than 20°C above ambient temperature.

5.2.13. Control of worker exposure: Manual activities involving hand contact (PROC19)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

Other conditions affecting workers exposure

Temperature : Assumess use at not more than 20°C above ambient temperature.

5.3. Exposure estimation and reference to its source

5.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.334 µg/l (EUSES)</td>
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<td>Sea water</td>
<td>0.0326 µg/l (EUSES)</td>
<td>0.027</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0.129 mg/kg wet weight (EUSES)</td>
<td>0.276</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Environment</th>
<th>Concentration (mg/kg wet weight or mg/m³)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sea sediment</td>
<td>(EUSES)</td>
<td>0.027</td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>0.431</td>
</tr>
<tr>
<td>Air</td>
<td></td>
<td>0.0061 mg/m³</td>
</tr>
</tbody>
</table>

### Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.

5.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

5.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

5.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

5.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

5.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

5.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

### Additional information on exposure estimation

A quantitative risk assessment is not required for human health.
5.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

5.3.9. Worker exposure: Roller application or brushing (PROC10)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

5.3.10. Worker exposure: Non-industrial spraying (PROC11)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

5.3.11. Worker exposure: Treatment of articles by dipping and pouring (PROC13)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

5.3.12. Worker exposure: Use as laboratory reagent (PROC15)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

5.3.13. Worker exposure: Manual activities involving hand contact (PROC19)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

5.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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

Required removal efficiency for wastewater can be achieved using onsite/offsite technologies, either alone or in combination.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
Further details on scaling and control technologies are provided in SpERC factsheet (http://cefic.org/en/reach-for-industries-libraries.html).
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ES 6: Use in Coatings - Consumer; Consumer uses (SU21).

6.1. Title section

<table>
<thead>
<tr>
<th>Exposure Scenario name</th>
<th>Use in Coatings - Consumer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured Short Title</td>
<td>Use in Coatings - Consumer; Consumer uses (SU21).</td>
</tr>
<tr>
<td>Substance</td>
<td>dec-1-ene EC-No.: 212-819-2</td>
</tr>
</tbody>
</table>

6.2. Conditions of use affecting exposure

6.2.1. Control of environmental exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)
### Product (article) characteristics

Covers percentage substance in the product up to 100%.

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum allowable site tonnage (MSafe)</td>
<td>52 kg/day</td>
</tr>
<tr>
<td>Release type</td>
<td>Wide dispersive use</td>
</tr>
<tr>
<td>Emission days</td>
<td>365</td>
</tr>
</tbody>
</table>

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

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

### Other conditions affecting environmental exposure

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receiving surface water flow</td>
<td>18,000 m3/d</td>
</tr>
<tr>
<td>Local freshwater dilution factor</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor</td>
<td>100</td>
</tr>
</tbody>
</table>

### 6.2.2. Control of consumer exposure: Adhesives, sealants (PC1)

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

#### Physical form of product

- Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

| Duration                              | Covers daily exposures up to 8 hours |

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

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

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

### Other conditions affecting consumers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

### 6.2.3. Control of consumer exposure: Anti-Freeze and de-icing products (PC4)

#### Product (article) characteristics

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<table>
<thead>
<tr>
<th>Covers percentage substance in the product up to 100 %.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical form of product</strong>: Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

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

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

**Other conditions affecting consumers exposure**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumes use at not more than 20°C above ambient temperature.</th>
</tr>
</thead>
</table>

6.2.4. Control of consumer exposure: Biocidal products (PC8)

<table>
<thead>
<tr>
<th>Product (article) characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 100 %.</td>
</tr>
<tr>
<td><strong>Physical form of product</strong>: Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

**Other conditions affecting consumers exposure**

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumes use at not more than 20°C above ambient temperature.</th>
</tr>
</thead>
</table>

6.2.5. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a)

<table>
<thead>
<tr>
<th>Product (article) characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 100 %.</td>
</tr>
</tbody>
</table>

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**Revision Date 2020-03-03**

<table>
<thead>
<tr>
<th><strong>Physical form of product</strong></th>
<th>Liquid, vapour pressure $&lt; 0.5$ kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th><strong>Duration</strong></th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

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

- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
- No other specific measures identified.

**Other conditions affecting consumers exposure**

- **Temperature**: Assumes use at not more than 20°C above ambient temperature.

#### 6.2.6. Control of consumer exposure: Fillers, putties, plasters, modelling clay (PC9b)

**Product (article) characteristics**

- Covers percentage substance in the product up to 100%.

<table>
<thead>
<tr>
<th><strong>Physical form of product</strong></th>
<th>Liquid, vapour pressure $&lt; 0.5$ kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th><strong>Duration</strong></th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

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

- Do not ingest. If swallowed then seek immediate medical assistance.
- Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.
- No other specific measures identified.

**Other conditions affecting consumers exposure**

- **Temperature**: Assumes use at not more than 20°C above ambient temperature.

#### 6.2.7. Control of consumer exposure: Finger paints (PC9c)

**Product (article) characteristics**

- Covers percentage substance in the product up to 100%.

<table>
<thead>
<tr>
<th><strong>Physical form of product</strong></th>
<th>Liquid, vapour pressure $&lt; 0.5$ kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

**SDS Number:** 100000068089
### Amount used (or contained in articles), frequency and duration of use/exposure

| Duration | Covers daily exposures up to 8 hours |

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

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting consumers exposure

Temperature: Assumes use at not more than 20°C above ambient temperature.

### 6.2.8. Control of consumer exposure: Non-metal surface treatment products (PC15)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

| Duration | Covers daily exposures up to 8 hours |

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

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting consumers exposure

Temperature: Assumes use at not more than 20°C above ambient temperature.

### 6.2.9. Control of consumer exposure: Ink and toners (PC18)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting consumers exposure

Temperature: Assumes use at not more than 20°C above ambient temperature.

### 6.2.10. Control of consumer exposure: Leather treatment products (PC23)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure.

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

Duration: Covers daily exposures up to 8 hours

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

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting consumers exposure

Temperature: Assumes use at not more than 20°C above ambient temperature.

### 6.2.11. Control of consumer exposure: Lubricants, greases, release products (PC24)

#### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure.

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

Duration: Covers daily exposures up to 8 hours
## Conditions and measures related to personal protection, hygiene and health evaluation

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting consumers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

## 6.2.12. Control of consumer exposure: Polishes and wax blends (PC31)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration: Covers daily exposures up to 8 hours

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

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting consumers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

## 6.2.13. Control of consumer exposure: Textile dyes and impregnating products (PC34)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

Physical form of product: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Duration: Covers daily exposures up to 8 hours

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

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Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting consumers exposure

Temperature : Assumes use at not more than 20°C above ambient temperature.

6.3. Exposure estimation and reference to its source

6.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, indoor) (ERC8a) / Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0,283 µg/l (EUSES)</td>
<td>0,236</td>
</tr>
<tr>
<td>Sea water</td>
<td>0,0276 µg/l (EUSES)</td>
<td>0,023</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0,109 mg/kg wet weight (EUSES)</td>
<td>0,235</td>
</tr>
<tr>
<td>Sea sediment</td>
<td>0,0106 mg/kg wet weight (EUSES)</td>
<td>0,023</td>
</tr>
<tr>
<td>Soil</td>
<td>0,135 mg/kg wet weight (EUSES)</td>
<td>0,355</td>
</tr>
<tr>
<td>Air</td>
<td>0,005 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.

6.3.2. Consumer exposure: Adhesives, sealants (PC1)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.3. Consumer exposure: Anti-Freeze and de-icing products (PC4)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.4. Consumer exposure: Biocidal products (PC8)

Additional information on exposure estimation

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A quantitative risk assessment is not required for human health.

6.3.5. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.6. Consumer exposure: Fillers, putties, plasters, modelling clay (PC9b)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.7. Consumer exposure: Finger paints (PC9c)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.8. Consumer exposure: Non-metal surface treatment products (PC15)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.9. Consumer exposure: Ink and toners (PC18)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.10. Consumer exposure: Leather treatment products (PC23)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.11. Consumer exposure: Lubricants, greases, release products (PC24)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

SDS Number:100000068089  69/85
6.3.12. Consumer exposure: Polishes and wax blends (PC31)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

6.3.13. Consumer exposure: Textile dyes and impregnating products (PC34)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

6.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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).
# AlphaPlus® 1-Decene

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## ES 7: Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).

### 7.1. Title section

<table>
<thead>
<tr>
<th>Exposure Scenario name</th>
<th>Use in Oil and Gas field drilling and production operations - Industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured Short Title</td>
<td>Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).</td>
</tr>
<tr>
<td>Substance</td>
<td>dec-1-ene</td>
</tr>
<tr>
<td>EC-No.</td>
<td>212-819-2</td>
</tr>
</tbody>
</table>

### Environment

<table>
<thead>
<tr>
<th>CS</th>
<th>Use in Oil and Gas field drilling and production operations - Industrial</th>
<th>ERC4</th>
</tr>
</thead>
</table>

### Worker

<table>
<thead>
<tr>
<th>CS</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
<th>PROC</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>8a</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>8b</td>
</tr>
</tbody>
</table>

### 7.2. Conditions of use affecting exposure

#### 7.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

<table>
<thead>
<tr>
<th>Product (article) characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covers percentage substance in the product up to 100 %.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Amount used (or contained in articles), frequency and duration of use/exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Release type</td>
</tr>
<tr>
<td>Remarks</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Technical and organisational conditions and measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge to aquatic environment is restricted (see section 4.2).</td>
</tr>
</tbody>
</table>
# Conditions and measures related to sewage treatment plant

<table>
<thead>
<tr>
<th>STP type</th>
<th>Municipal sewage treatment plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP sludge treatment</td>
<td>Prevent environmental discharge consistent with regulatory requirements.</td>
</tr>
</tbody>
</table>

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

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

## 7.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Product (article) characteristics

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

| Temperature | Assumes use at not more than 20°C above ambient temperature. |

## 7.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

### Product (article) characteristics

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |
# AlphaPlus® 1-Decene

## Version 2.9

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumed use at not more than 20°C above ambient temperature.</th>
</tr>
</thead>
</table>

### 7.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

<table>
<thead>
<tr>
<th>Physical form of product</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumed use at not more than 20°C above ambient temperature.</th>
</tr>
</thead>
</table>

### 7.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

<table>
<thead>
<tr>
<th>Physical form of product</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>SDS Number: 100000068089</th>
<th>73/85</th>
</tr>
</thead>
</table>
## AlphaPlus® 1-Decene

### SAFETY DATA SHEET

**Version 2.9**  
**Revision Date**: 2020-03-03  
**SDS Number**: 100000068089  
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### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**: Assumes use at not more than 20°C above ambient temperature.

### 7.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**: Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**: Assumes use at not more than 20°C above ambient temperature.

### 7.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

SDS Number: 100000068089  
74/85
### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop.

No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**
Assumes use at not more than 20°C above ambient temperature.

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

#### 7.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

**Additional information on exposure estimation**
There are no expected releases to the environment from this use, so no exposure assessment is made.

#### 7.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.

#### 7.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.

#### 7.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.

#### 7.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

**Additional information on exposure estimation**
A quantitative risk assessment is not required for human health.
7.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non-dedicated-facilities (PROC8a)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

7.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

7.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

Discharge to aquatic environment is restricted by law and industry prohibits release.
ES 8: Use in polymer production – industrial; Industrial uses (SU3).

8.1. Title section

<table>
<thead>
<tr>
<th>Exposure Scenario name</th>
<th>Use in polymer production – industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td>Structured Short Title</td>
<td>Use in polymer production – industrial; Industrial uses (SU3).</td>
</tr>
<tr>
<td>Substance</td>
<td>dec-1-ene</td>
</tr>
<tr>
<td></td>
<td>EC-No.: 212-819-2</td>
</tr>
</tbody>
</table>

Environment

<table>
<thead>
<tr>
<th>CS 1</th>
<th>Use in polymer production – industrial</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ERC4, ERC6c</td>
</tr>
</tbody>
</table>

Worker

<table>
<thead>
<tr>
<th>CS 2</th>
<th>General measures applicable to all activities, General measures (skin irritants)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PROC1</td>
</tr>
<tr>
<td>CS 3</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC2</td>
</tr>
<tr>
<td>CS 4</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC3</td>
</tr>
<tr>
<td>CS 5</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC4</td>
</tr>
<tr>
<td>CS 6</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC5</td>
</tr>
<tr>
<td>CS 7</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC6</td>
</tr>
<tr>
<td>CS 8</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC8a</td>
</tr>
<tr>
<td>CS 9</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC8b</td>
</tr>
<tr>
<td>CS 10</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC14</td>
</tr>
<tr>
<td>CS 11</td>
<td>General measures applicable to all activities, General measures (skin irritants)</td>
</tr>
<tr>
<td></td>
<td>PROC21</td>
</tr>
</tbody>
</table>

8.2. Conditions of use affecting exposure

8.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4) / Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Amount used (or contained in articles), frequency and duration of use/exposure
### Conditions and measures related to sewage treatment plant

<table>
<thead>
<tr>
<th>STP type</th>
<th>Municipal sewage treatment plant</th>
</tr>
</thead>
<tbody>
<tr>
<td>STP 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>STP effluent</td>
<td>2,000 m3/d</td>
</tr>
</tbody>
</table>

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

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

### Other conditions affecting environmental exposure

<table>
<thead>
<tr>
<th>Receiving surface water flow</th>
<th>18,000 m3/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local freshwater dilution factor</td>
<td>10</td>
</tr>
<tr>
<td>Local marine water dilution factor</td>
<td>100</td>
</tr>
</tbody>
</table>

### 8.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

### Product (article) characteristics

| Physical form of product                  | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
### Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

### 8.2.3. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**

Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**

Assumes use at not more than 20°C above ambient temperature.

### 8.2.4. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**

Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**

Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

| Temperature     | Assumes use at not more than 20°C above ambient temperature. |

8.2.5. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Product (article) characteristics

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

Technical and organisational conditions and measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

Other conditions affecting workers exposure

| Temperature     | Assumes use at not more than 20°C above ambient temperature. |

8.2.6. Control of worker exposure: Mixing or blending in batch processes (PROC5)

Product (article) characteristics

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

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

| Duration | Covers daily exposures up to 8 hours |

Technical and organisational conditions and measures

Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /
**AlphaPlus® 1-Decene**

**Version 2.9**

<table>
<thead>
<tr>
<th>Other conditions affecting workers exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Temperature</strong> : Assumes use at not more than 20°C above ambient temperature.</td>
</tr>
</tbody>
</table>

### 8.2.7. Control of worker exposure: Calendering operations (PROC6)

**Product (article) characteristics**

<table>
<thead>
<tr>
<th>Covers percentage substance in the product up to 100 %.</th>
</tr>
</thead>
</table>

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

<table>
<thead>
<tr>
<th>Amount used (or contained in articles), frequency and duration of use/exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong> : Covers daily exposures up to 8 hours</td>
</tr>
</tbody>
</table>

**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### 8.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

**Product (article) characteristics**

<table>
<thead>
<tr>
<th>Covers percentage substance in the product up to 100 %.</th>
</tr>
</thead>
</table>

| Physical form of product | Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure |

<table>
<thead>
<tr>
<th>Amount used (or contained in articles), frequency and duration of use/exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong> : Covers daily exposures up to 8 hours</td>
</tr>
</tbody>
</table>

**Technical and organisational conditions and measures**

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent/minimise exposures and to report any skin problems that may develop. No other specific measures identified.
minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumes use at not more than 20°C above ambient temperature.</th>
</tr>
</thead>
</table>

8.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

<table>
<thead>
<tr>
<th>Physical form of product</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

<table>
<thead>
<tr>
<th>Temperature</th>
<th>Assumes use at not more than 20°C above ambient temperature.</th>
</tr>
</thead>
</table>

8.2.10. Control of worker exposure: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

### Product (article) characteristics

Covers percentage substance in the product up to 100 %.

<table>
<thead>
<tr>
<th>Physical form of product</th>
<th>Liquid, vapour pressure &lt; 0.5 kPa at Standard Temperature and Pressure</th>
</tr>
</thead>
</table>

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

<table>
<thead>
<tr>
<th>Duration</th>
<th>Covers daily exposures up to 8 hours</th>
</tr>
</thead>
</table>

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**
Assumes use at not more than 20°C above ambient temperature.

### 8.2.11. Control of worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

#### Product (article) characteristics

Covers percentage substance in the product up to 100%.

**Physical form of product**: Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

**Duration**: Covers daily exposures up to 8 hours

### Technical and organisational conditions and measures

Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.

### Other conditions affecting workers exposure

**Temperature**
Assumes use at not more than 20°C above ambient temperature.

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

#### 8.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4) / Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)

<table>
<thead>
<tr>
<th>Protection Target</th>
<th>Exposure estimate</th>
<th>RCR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Freshwater</td>
<td>0.476 µg/l (EUSES)</td>
<td>0.396</td>
</tr>
<tr>
<td>Sea water</td>
<td>0.0468 µg/l (EUSES)</td>
<td>0.039</td>
</tr>
<tr>
<td>Freshwater sediment</td>
<td>0.183 mg/kg wet weight (EUSES)</td>
<td>0.394</td>
</tr>
<tr>
<td>Sea sediment</td>
<td>0.018 mg/kg wet weight (EUSES)</td>
<td>0.039</td>
</tr>
<tr>
<td>Soil</td>
<td>0.247 mg/kg wet weight (EUSES)</td>
<td>0.651</td>
</tr>
<tr>
<td>Air</td>
<td>0.0185 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

SDS Number: 100000068089 83/85
Additional information on exposure estimation
Common practices vary across sites thus conservative process release estimates used.

8.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

8.3.3. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

8.3.4. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

8.3.5. Worker exposure: Chemical production where opportunity for exposure arises (PROC4)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

8.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

8.3.7. Worker exposure: Calendering operations (PROC6)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.

8.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)

Additional information on exposure estimation
A quantitative risk assessment is not required for human health.
8.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

8.3.10. Worker exposure: Tabletting, compression, extrusion, pellettisation, granulation (PROC14)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

8.3.11. Worker exposure: Low energy manipulation and handling of substances bound in/on materials and/or articles (PROC21)

**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

8.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

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).