

AlphaPlus[®] 1-DODECENE

Version 5.11

Revision Date 2023-10-30

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2020/878

SECTION 1: Identification of the substance/mixture and of the company/undertaking
1.1 Product identifier
Product information

Product Name : AlphaPlus[®] 1-DODECENE
 Material : 1128424, 1087853, 1037008, 1015429, 1021778

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
1-Dodecene	112-41-4 203-968-4	Chevron Phillips Chemical Company LP 01-2119475509-26-0003

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

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

1.3
Details of the supplier of the safety data sheet

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

SDS Requests: (800) 852-5530
 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

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

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Austria: VIZ +43 1 406 43 43 (24 hours/day, 7 days/week)

Belgium: 070 245 245 (24 hours/day, 7 days/week)

Bulgaria: +359 2 9154 233

Croatia: +3851 2348 342 (24 hours/day, 7 days/week)

Cyprus: 1401

Czech Republic: Toxicological Information Center +420 224 919 293, +420 224 915 402

Denmark: Danish Poison Center (Gifflinjen): +45 8212 1212

Estonia: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Finland: 0800 147 111 09 471 977 (24 hours/day)

France: ORFILA number (INRS): + 33 (0) 1 45 42 59 59 (24 hours/day, 7 days/week)

Germany: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Greece: (0030) 2107793777 (24 hours/day, 7 days/week)

Hungary: +36-80-201-199 (24 hours/day, 7 days/week)

Iceland: 543 2222 (24 hours/day, 7 days/week)

Ireland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Italy: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Latvia: State Fire and Rescue Service, phone number: 112; Toxicology and Sepsis Clinic

Poisoning and Drug Information Center, Hipokrāta 2, Riga, Latvia, LV-1038, phone number +371 67042473. (24 hours.)

Liechtenstein: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Lithuania: +370 (85) 2362052

Luxembourg: (+352) 8002 5500 (24 hours/day, 7 days/week)

Malta: +356 2395 2000

The Netherlands: NVIC: +31 (0)88 755 8000

Norway: 22 59 13 00 (24 hours/day, 7 days/week)

Poland: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Portugal: CIAV phone number: +351 800 250 250

Romania: +40213183606

Slovakia: +421 2 5477 4166

Slovenia: Phone number: 112

Spain: National Emergency Telephone Number of Spanish Poison Centre: +34 91 562 04 20 (24 hours/day, 7 days/week)

Sweden: 112 – ask for Poisons Information

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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**

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

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

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H304 May be fatal if swallowed and enters airways.

Precautionary Statements : **Response:**
 P301 + P310 IF SWALLOWED: Immediately call a
 POISON CENTER/ doctor.
 Do NOT induce vomiting.
P331
Storage:
 P405 Store locked up.
Disposal:
 P501 Dispose of contents/ container to an
 approved waste disposal plant.

Hazardous ingredients which must be listed on the label:

- 112-41-4 1-Dodecene

2.3**Other hazards**

Results of PBT and vPvB assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

SECTION 3: Composition/information on ingredients**3.1 - 3.2****Substance or Mixture**

Synonyms : NAO 12
Dodecene-1 (C12)
C12H24

Molecular formula : C12H24

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]	Specific Conc. Limits, M-factors and ATEs
1-Dodecene	112-41-4 203-968-4	Asp. Tox. 1; H304	90 - 100	

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

SECTION 4: First aid measures**4.1****Description of first-aid measures**

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

If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

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

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

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

4.2 Most important symptoms and effects, both acute and delayed**Notes to physician**

Symptoms : No information available.

Risks : No information available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No information available.

SECTION 5: Firefighting measures

Flash point : 77°C (171°F)

Autoignition temperature : 225°C (437°F)

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

5.1**Extinguishing media**

Suitable extinguishing media : Carbon dioxide (CO₂).

Unsuitable extinguishing media : High volume water jet.

5.2**Special hazards arising from the substance or mixture**

Specific hazards during fire fighting : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2**Special hazards arising from the substance or mixture**

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 a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

SECTION 6: Accidental release measures**6.1****Personal precautions, protective equipment and emergency procedures**

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

6.2**Environmental precautions**

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

6.3**Methods and materials for containment and cleaning up**

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

6.4**Reference to other sections**

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

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

SECTION 7: Handling and storage**7.1****Precautions for safe handling
Handling**

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

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material. Keep away from open flames, hot surfaces and sources of ignition.

7.2**Conditions for safe storage, including any incompatibilities****Storage**

Requirements for storage areas and containers : No smoking. Keep in a 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
Ingredients with workplace control parameters****SE**

Beståndsdelar	Grundval	Värde	Kontrollparametrar	Anmärkning
1-Dodecene	SE AFS	NGV	350 mg/m ³	
	SE AFS	KGV	500 mg/m ³	V,

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

NO

Komponenter	Grunnlag	Verdi	Kontrollparametrer	Nota
1-Dodecene	FOR-2011-12-06-1358	GV	40 ppm, 275 mg/m ³	

LT

Komponentai	Šaltinis	Vertė	Kontrolės parametrai	Pastaba
1-Dodecene	LT OEL	IPRD	350 mg/m ³	
	LT OEL	TPRD	500 mg/m ³	

EE

Komponendid, osad	Alused	Väärtus	Kontrolliparameetrid	Märkused
1-Dodecene	EE OEL	Piirnorm	5 mg/m ³	Aerosool
	EE OEL	Piirnorm	350 mg/m ³	Aur
	EE OEL	Lühiajalise kokkupuute piirnorm	500 mg/m ³	Aur

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

PNEC	:	Fresh water Value: 0,001 mg/l
PNEC	:	Sea water Value: 0,001 mg/l
PNEC	:	Fresh water sediment Value: 9,87 mg/kg
PNEC	:	Sea sediment Value: 9,87 mg/kg
PNEC	:	Soil Value: 1,97 mg/kg

8.2**Exposure controls
Engineering measures**

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

Personal protective equipment

Respiratory protection	:	If ventilation or other engineering controls are not adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure, a supplied-air NIOSH approved respirator may be appropriate. If exposure to harmful levels of airborne material may occur, a NIOSH approved respirator that provides protection may be appropriate, such as: Air-Purifying Respirator for Organic Vapors. A positive pressure, air-supplying respirator may be appropriate if there is potential for uncontrolled release, aerosolization, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
Hand protection	:	The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
Eye protection	:	Eye wash bottle with pure water. Tightly fitting safety goggles.
Skin and body protection	:	Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame-resistant clothing. Footwear protecting against chemicals.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

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

SECTION 9: Physical and chemical properties**9.1****Information on basic physical and chemical properties****Appearance**

Form : liquid
Physical state : liquid
Color : Clear, colorless

Safety data

Flash point : 77°C (171°F)

Lower explosion limit : 0,6 %(V)

Upper explosion limit : 5,4 %(V)

Oxidizing properties : no

Autoignition temperature : 225°C (437°F)

Thermal decomposition : No data available

Molecular formula : C₁₂H₂₄

Molecular weight : 168,36 g/mol

pH : Not applicable

Freezing point : -35°C (-31°F)

Boiling point/boiling range : 213°C (415°F)

Vapor pressure : 0,35 kPa
at 65°C (149°F)

Relative density : 0,76
at 15,6 °C (60,1 °F)

Density : 0,76 g/m³
at 20°C (68°F)

762 kg/m³
at 15°C (59°F)

736 kg/m³
at 50°C (122°F)

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: 0,68 cSt at 100°C (212°F)
Relative vapor density	: 5,81 (Air = 1.0)
Evaporation rate	: No data available

SECTION 10: Stability and reactivity**10.1**

Reactivity : 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 : 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.

Thermal decomposition : No data available

10.6

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

SECTION 11: Toxicological information**11.1****Information on toxicological effects****Acute oral toxicity**

1-Dodecene : LD50: > 10.000 mg/kg
Species: Rat
Sex: male
Method: Fixed Dose Method

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Information given is based on data obtained from similar substances.

Acute inhalation toxicity

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

Skin irritation

1-Dodecene : No skin irritation

Eye irritation

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

Sensitization

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

Repeated dose toxicity

1-Dodecene : Species: Rat, Male and female
Sex: Male and female
Application Route: Oral diet
Dose: 0, 100, 500, 1000 mg/kg
Exposure time: 13 wk
Number of exposures: daily
NOEL: 1.000 mg/kg
Method: OCED 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 wk
Number of exposures: 6 hrs/d, 5 d/wk
NOEL: 3000 ppm
Method: OECD Guideline 413
Information given is based on data obtained from similar substances.

Genotoxicity in vitro

1-Dodecene : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

Test Type: Chromosome aberration test in vitro
Method: OECD Guideline 473
Result: negative

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Reproductive toxicity

1-Dodecene : Species: Rat
 Sex: male
 Application Route: Oral diet
 Dose: 0, 100, 500, or 1000 mg/kg
 Exposure time: 44 D
 Number of exposures: daily
 Method: OECD Guideline 421
 NOAEL Parent: 1.000 mg/kg
 NOAEL F1: 1.000 mg/kg

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

Aspiration toxicity

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

CMR effects

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

11.2**Information on other hazards****AlphaPlus® 1-DODECENE**

Further information : Solvents may degrease the skin.
 Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information**12.1****Toxicity****Toxicity to fish**

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

Toxicity to daphnia and other aquatic invertebrates

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

Toxicity to algae

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

12.2**Persistence and degradability**

Biodegradability

1-Dodecene : 74,1 - 80 %
Testing period: 28 d
Method: OECD Test Guideline 301
This material is expected to be readily biodegradable.

12.3**Bioaccumulative potential**

Bioaccumulation

1-Dodecene : No data available

12.4**Mobility in soil**

Mobility

1-Dodecene : No data available

12.5**Results of PBT and vPvB assessment**

Results of PBT assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6**Endocrine disrupting properties**

Endocrine disrupting properties : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7**Other adverse effects**

Additional ecological information : No data available

12.8**Additional Information****Ecotoxicology Assessment**

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

SECTION 13: Disposal considerations**13.1****Waste treatment methods**

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

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

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., COMBUSTIBLE LIQUID, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

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

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

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

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

NOT REGULATED AS A HAZARDOUS MATERIAL OR DANGEROUS GOODS FOR

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

TRANSPORTATION BY THIS AGENCY.

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

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

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

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

TANK VESSELS: ID9003, SUBSTANCES WITH A FLASH-POINT ABOVE 60°C AND NOT MORE THAN 100°C, 9

Other information	:	1-Dodecene, S.T. 3, Cat. Y
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Maritime transport in bulk according to IMO instruments

SECTION 15: Regulatory information**15.1****Safety, health and environmental regulations/legislation specific for the substance or mixture**
National legislation

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Water hazard class (Germany) : WGK 1 slightly water endangering**15.2****Chemical Safety Assessment****Components** : dodec-1-ene A Chemical Safety Assessment 203-968-4 has been carried out for this substance.**Major Accident Hazard Legislation** : 96/82/EC Update: 2003
Directive 96/82/EC does not apply: ZEU_SEVES3 Update:
Not applicable**Notification status**

Europe REACH : This product is in full compliance according to REACH regulation 1907/2006/EC.

United States of America (USA) : On or in compliance with the active portion of the TSCA inventory
TSCA

AlphaPlus® 1-DODECENE

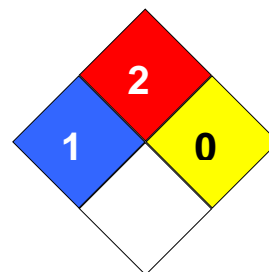
Version 5.11

Revision Date 2023-10-30

Australia AIIC	:	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
Philippines PICCS	:	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 or the exported amount does not exceed the minimum threshold quantity of the non-registered substance(s).
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 2
Reactivity Hazard: 0

**Further information**

Legacy SDS Number : PE0019

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

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

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

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

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AIIC	Australian Inventory of Industrial Chemicals	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%	ATE	Acute toxicity estimate

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

H304

May be fatal if swallowed and enters airways.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Annex: Exposure Scenarios**Table of Contents**

Number	Title
ES 1	Manufacture (M); Industrial uses (SU3).
ES 2	Use as an intermediate; Industrial uses (SU3).
ES 3	Formulation; Industrial uses (SU3).
ES 4	Use in coatings – industrial; Industrial uses (SU3).
ES 5	Use in coatings – professional; Professional uses (SU22).
ES 6	Use in Coatings - Consumer; Consumer uses (SU21).
ES 7	Use as a cleaning agent – industrial; Industrial uses (SU3).
ES 8	Use as a cleaning agent – professional; Professional uses (SU22).
ES 9	Use as a cleaning agent – consumer; Consumer uses (SU21).
ES 10	Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).
ES 11	Use in Oil and Gas field drilling and production operations – Professional; Professional uses (SU22).
ES 12	Lubricants - Industrial; Industrial uses (SU3).
ES 13	Lubricants - Professional; Professional uses (SU22).
ES 14	Lubricants - Consumer; Consumer uses (SU21).
ES 15	Functional Fluids - Industrial; Industrial uses (SU3).
ES 16	Functional Fluids - Professional; Professional uses (SU22).
ES 17	Use in polymer production – industrial; Industrial uses (SU3).

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 1: Manufacture (M); Industrial uses (SU3).**1.1. Title section****Exposure Scenario name** : Manufacture**Structured Short Title** : Manufacture (M); Industrial uses (SU3).**Substance** : dodec-1-ene
EC-No.: 203-968-4**Environment****CS 1** **Manufacture** ERC1, ERC4**Worker****CS 2** **General measures applicable to all activities, General measures (skin irritants)** PROC1**CS 3** **General measures applicable to all activities, General measures (skin irritants)** PROC2**CS 4** **General measures applicable to all activities, General measures (skin irritants)** PROC3**CS 5** **General measures applicable to all activities, General measures (skin irritants)** PROC4**CS 6** **General measures applicable to all activities, General measures (skin irritants)** PROC8a**CS 7** **General measures applicable to all activities, General measures (skin irritants)** PROC8b**CS 8** **General measures applicable to all activities, General measures (skin irritants)** PROC15**1.2. Conditions of use affecting exposure****1.2.1. Control of environmental exposure: Manufacture of substances (ERC1) / Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)****Product (article) characteristics**

Covers percentage substance in the product up to 100 %.

Amount used (or contained in articles), frequency and duration of use/exposureMaximum allowable site tonnage : 213.676 kg/day
(MSafe)

Release type : Continuous release

Emission days : 300

Technical and organisational conditions and measures

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Risk from environmental exposure is driven by freshwater sediment.

Air - minimum efficiency of 90 %

Water - minimum efficiency of 96,4 %

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 : 40

Local marine water dilution factor : 100

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**

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.

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Version 5.11

Revision Date 2023-10-30

1.2.3. 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.

1.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

1.3. Exposure estimation and reference to its source**1.3.1. Environmental release and exposure: Manufacture of substances (ERC1) / Industrial use of processing aids in processes and products, not becoming part of articles (ERC4)**

Protection Target	Exposure estimate	RCR
Freshwater	0,280 µg/l (EUSES)	0,3
Sea water	0,105 µg/l (EUSES)	0,117
Freshwater sediment	0,669 mg/kg wet weight (EUSES)	0,312
Sea sediment	0,251 mg/kg wet weight (EUSES)	0,117
Soil	0,0048 mg/kg wet weight (EUSES)	0,003
Air	0,00185 mg/m ³	

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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>).

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 2: Use as an intermediate; Industrial uses (SU3).**2.1. Title section**

Exposure Scenario name	: Use as an intermediate
Structured Short Title	: Use as an intermediate; Industrial uses (SU3).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use as an intermediate	ERC6a
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC15

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)	: 43.975 kg/day
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Release type	: Continuous release
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Emission days	: 300
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Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Air - minimum efficiency of 80 %
 Water - minimum efficiency of 96,4 %

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

2.2.2. 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 temperature.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

2.2.3. 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.

2.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

temperature.

2.2.5. 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.

2.2.6. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

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

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 %.

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.

2.2.8. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

2.3. Exposure estimation and reference to its source**2.3.1. Environmental release and exposure: Use of intermediate (ERC6a)**

Protection Target	Exposure estimate	RCR
Freshwater	0,538 µg/l (EUSES)	0,597
Sea water	0,0536 µg/l (EUSES)	0,060
Freshwater sediment	1,29 mg/kg wet weight (EUSES)	0,599
Sea sediment	0,128 mg/kg wet weight (EUSES)	0,060
Soil	1,32 mg/kg wet weight (EUSES)	0,758
Air	0,185 µg/m ³	

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

2.3.6. 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.

2.3.7. 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.

2.3.8. Worker exposure: Use as laboratory reagent (PROC15)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

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-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 3: Formulation; Industrial uses (SU3).**3.1. Title section**

Exposure Scenario name	: Formulation
Structured Short Title	: Formulation; Industrial uses (SU3).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Formulation	ERC2
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC5
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC9
CS 10	General measures applicable to all activities, General measures (skin irritants)	PROC14
CS 11	General measures applicable to all activities, General measures (skin irritants)	PROC15

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 : 74.906 kg/day

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

(MSafe)

Release type : Continuous release

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 96,4 %

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Other conditions affecting workers exposure

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

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 /

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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: 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 /

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Version 5.11

Revision Date 2023-10-30

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 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.

3.2.8. 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

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

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Version 5.11

Revision Date 2023-10-30

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: 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.

3.2.10. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

(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.

3.2.11. 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)**

Protection Target	Exposure estimate	RCR
Freshwater	0,177 µg/l (EUSES)	0,196
Sea water	0,0175 µg/l (EUSES)	0,019
Freshwater sediment	0,422 mg/kg wet weight (EUSES)	0,197
Sea sediment	0,0418 mg/kg wet weight (EUSES)	0,020
Soil	0,465 mg/kg wet weight (EUSES)	0,267
Air	0,0278 mg/m ³	

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Version 5.11

Revision Date 2023-10-30

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: Mixing or blending in batch processes (PROC5)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

3.3.7. 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.

3.3.8. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

3.3.9. 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.

3.3.10. Worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

3.3.11. Worker exposure: Use as laboratory reagent (PROC15)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

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>).

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 4: Use in coatings – industrial; Industrial uses (SU3).**4.1. Title section**

Exposure Scenario name	: Use in coatings – industrial
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Structured Short Title	: Use in coatings – industrial; Industrial uses (SU3).
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Substance	: dodec-1-ene EC-No.: 203-968-4
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Environment

CS 1	Use in coatings – industrial	ERC4
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
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CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
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CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
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CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
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CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC5
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CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC7
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CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC8a
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CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC8b
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CS 10	General measures applicable to all activities, General measures (skin irritants)	PROC9
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CS 11	General measures applicable to all activities, General measures (skin irritants)	PROC10
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CS 12	General measures applicable to all activities, General measures (skin irritants)	PROC13
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CS 13	General measures applicable to all activities, General measures (skin irritants)	PROC14
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CS 14	General measures applicable to all activities, General measures (skin irritants)	PROC15
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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-DODECENE

Version 5.11

Revision Date 2023-10-30

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Amount used (or contained in articles), frequency and duration of use/exposureMaximum allowable site tonnage : 11.905 kg/day
(MSafe)

Release type : Continuous release

Emission days : 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.

Air - minimum efficiency of 90 %

Water - minimum efficiency of 96,4 %

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

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

Other conditions affecting workers exposure

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

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

4.3. 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)**

Protection Target	Exposure estimate	RCR
Freshwater	0,0388 µg/l (EUSES)	0,043
Sea water	0,0369 µg/l (EUSES)	0,004
Freshwater sediment	0,0928 mg/kg wet weight (EUSES)	0,043
Sea sediment	0,0088 mg/kg wet weight (EUSES)	0,004
Soil	0,0804 mg/kg wet weight (EUSES)	0,046
Air	0,0149 mg/m ³	

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.

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Version 5.11

Revision Date 2023-10-30

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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>).

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 5: Use in coatings – professional; Professional uses (SU22).**5.1. Title section**

Exposure Scenario name	: Use in coatings – professional
Structured Short Title	: Use in coatings – professional; Professional uses (SU22).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use in coatings – professional	ERC8a, ERC8d
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC5
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC10
CS 10	General measures applicable to all activities, General measures (skin irritants)	PROC11
CS 11	General measures applicable to all activities, General measures (skin irritants)	PROC13
CS 12	General measures applicable to all activities, General measures (skin irritants)	PROC15
CS 13	General measures applicable to all activities, General measures (skin irritants)	PROC19

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)

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Amount used (or contained in articles), frequency and duration of use/exposureMaximum allowable site tonnage : 25 kg/day
(MSafe)

Release type : Wide dispersive use

Emission days : 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.

Air - minimum efficiency of 0 %

Water - minimum efficiency of 96,4 %

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

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

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.

5.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

5.2.5. 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.

5.2.6. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

5.2.7. 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

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.

5.2.8. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

5.2.13. 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 : Assumes 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)**

Protection Target	Exposure estimate	RCR
Freshwater	0,0388 µg/l (EUSES)	0,043
Sea water	0,0037 µg/l (EUSES)	0,004
Freshwater sediment	0,0928 mg/kg wet weight	0,043

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

	(EUSES)	
Sea sediment	0,0088 mg/kg wet weight (EUSES)	0,004
Soil	0,0441 mg/kg wet weight (EUSES)	0,025
Air	0,298 µg/m ³	

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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>).

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 6: Use in Coatings - Consumer; Consumer uses (SU21).**6.1. Title section**

Exposure Scenario name	: Use in Coatings - Consumer
Structured Short Title	: Use in Coatings - Consumer; Consumer uses (SU21).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use in Coatings - Consumer	ERC8a, ERC8d
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Consumer

CS 2	General measures applicable to all activities, General measures (skin irritants)	PC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PC4
CS 4	General measures applicable to all activities, General measures (skin irritants)	PC8
CS 5	General measures applicable to all activities, General measures (skin irritants)	PC9a
CS 6	General measures applicable to all activities, General measures (skin irritants)	PC9b
CS 7	General measures applicable to all activities, General measures (skin irritants)	PC9c
CS 8	General measures applicable to all activities, General measures (skin irritants)	PC15
CS 9	General measures applicable to all activities, General measures (skin irritants)	PC18
CS 10	General measures applicable to all activities, General measures (skin irritants)	PC23
CS 11	General measures applicable to all activities, General measures (skin irritants)	PC24
CS 12	General measures applicable to all activities, General measures (skin irritants)	PC31
CS 13	General measures applicable to all activities, General measures (skin irritants)	PC34

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)

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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) : 23 kg/day

Release type : Wide dispersive use

Emission days : 365

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

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**

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

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

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

Covers percentage substance in the product up to 100 %.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

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

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

6.2.8. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

6.2.10. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

6.3. 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)

Protection Target	Exposure estimate	RCR
Freshwater	0,0358 µg/l (EUSES)	0,040
Sea water	0,0034 µg/l (EUSES)	0,004
Freshwater sediment	0,0856 mg/kg wet weight (EUSES)	0,040
Sea sediment	0,0081 mg/kg wet weight (EUSES)	0,004
Soil	0,0364 mg/kg wet weight (EUSES)	0,021
Air	0,246 µg/m ³	

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)

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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**

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

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>).

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Version 5.11

Revision Date 2023-10-30

ES 7: Use as a cleaning agent – industrial; Industrial uses (SU3).**7.1. Title section**

Exposure Scenario name	: Use as a cleaning agent – industrial
Structured Short Title	: Use as a cleaning agent – industrial; Industrial uses (SU3).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use as a cleaning agent – industrial	ERC4
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC7
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC10
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC13

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)

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)	: 8.410 kg/day
Release type	: Continuous release
Emission days	: 300

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Version 5.11

Revision Date 2023-10-30

Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.

Air - minimum efficiency of 70 %

Water - minimum efficiency of 96,4 %

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

7.2.2. 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.

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Version 5.11

Revision Date 2023-10-30

7.2.3. 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.

7.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

temperature.

7.2.5. 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.

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

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.

7.2.8. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

temperature.

7.2.9. 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.

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)**

Protection Target	Exposure estimate	RCR
Freshwater	0,022 µg/l (EUSES)	0,024
Sea water	0,002 µg/l (EUSES)	0,002
Freshwater sediment	0,0525 mg/kg wet weight (EUSES)	0,025
Sea sediment	0,0048 mg/kg wet weight (EUSES)	0,002
Soil	0,114 mg/kg wet weight (EUSES)	0,065
Air	0,0046 mg/m ³	

Additional information on exposure estimation

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

7.3.2. 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.

7.3.3. 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.

7.3.4. 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.

7.3.5. Worker exposure: Industrial spraying (PROC7)**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.

7.3.8. Worker exposure: Roller application or brushing (PROC10)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

7.3.9. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

7.4. 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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Version 5.11

Revision Date 2023-10-30

ES 8: Use as a cleaning agent – professional; Professional uses (SU22).**8.1. Title section**

Exposure Scenario name	: Use as a cleaning agent – professional
Structured Short Title	: Use as a cleaning agent – professional; Professional uses (SU22).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use as a cleaning agent – professional	ERC8a, ERC8d
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC10
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC11
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC13

8.2. Conditions of use affecting exposure

8.2.1. 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

Maximum allowable site tonnage : 45 kg/day
(MSafe)

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Release type : Wide dispersive use

Emission days : 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.

Air - minimum efficiency of 0 %

Water - minimum efficiency of 96,4 %

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

8.2.2. 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**

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

8.2.3. 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.

8.2.4. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Other conditions affecting workers exposure

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

8.2.5. 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.

8.2.6. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Other conditions affecting workers exposure

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

8.2.7. 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.

8.2.8. 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

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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Other conditions affecting workers exposure

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

8.2.9. 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.

8.3. Exposure estimation and reference to its source

8.3.1. 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)

Protection Target	Exposure estimate	RCR
Freshwater	0,0219 µg/l (EUSES)	0,024
Sea water	0,002 µg/l (EUSES)	0,002
Freshwater sediment	0,0523 mg/kg wet weight (EUSES)	0,024
Sea sediment	0,0048 mg/kg wet weight (EUSES)	0,002
Soil	0,105 µg/kg wet weight (EUSES)	0,000
Air	0,0061 µg/m ³	

Additional information on exposure estimation

SDS Number:100000068203

86/156

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

8.3.2. 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.

8.3.3. 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.

8.3.4. 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.

8.3.5. 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.

8.3.6. 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.

8.3.7. Worker exposure: Roller application or brushing (PROC10)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

8.3.8. Worker exposure: Non-industrial spraying (PROC11)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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>).

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 9: Use as a cleaning agent – consumer; Consumer uses (SU21).**9.1. Title section**

Exposure Scenario name	: Use as a cleaning agent – consumer
Structured Short Title	: Use as a cleaning agent – consumer; Consumer uses (SU21).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use as a cleaning agent – consumer	ERC8a, ERC8d
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Consumer

CS 2	General measures applicable to all activities, General measures (skin irritants)	PC3
CS 3	General measures applicable to all activities, General measures (skin irritants)	PC4
CS 4	General measures applicable to all activities, General measures (skin irritants)	PC8
CS 5	General measures applicable to all activities, General measures (skin irritants)	PC9a
CS 6	General measures applicable to all activities, General measures (skin irritants)	PC9b
CS 7	General measures applicable to all activities, General measures (skin irritants)	PC9c
CS 8	General measures applicable to all activities, General measures (skin irritants)	PC24
CS 9	General measures applicable to all activities, General measures (skin irritants)	PC35
CS 10	General measures applicable to all activities, General measures (skin irritants)	PC38

9.2. Conditions of use affecting exposure

9.2.1. 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

Maximum allowable site tonnage : 14 kg/day

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

(MSafe)

Release type : Wide dispersive use

Emission days : 365

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

9.2.2. Control of consumer exposure: Air care products (PC3)**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.

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

9.2.4. Control of consumer exposure: Biocidal products (PC8)**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.

9.2.5. Control of consumer exposure: Coatings and paints, thinners, paint removers (PC9a)**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-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

9.2.6. Control of consumer exposure: Fillers, putties, plasters, modelling clay (PC9b)**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.

9.2.7. Control of consumer exposure: Finger paints (PC9c)**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-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

9.2.8. 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.

9.2.9. Control of consumer exposure: Washing and cleaning products (PC35)**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-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

9.2.10. Control of consumer exposure: Welding and soldering products, flux products (PC38)**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.

9.3. Exposure estimation and reference to its source**9.3.1. 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)**

Protection Target	Exposure estimate	RCR
Freshwater	0,0567 µg/l (EUSES)	0,063
Sea water	0,0055 µg/l (EUSES)	0,006
Freshwater sediment	0,136 mg/kg wet weight (EUSES)	0,063

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Sea sediment	0,0131 mg/kg wet weight (EUSES)	0,006
Soil	0,0898 mg/kg wet weight (EUSES)	0,052
Air	0,238 µg/m ³	

Additional information on exposure estimation

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

9.3.2. Consumer exposure: Air care products (PC3)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.3. Consumer exposure: Anti-Freeze and de-icing products (PC4)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.4. Consumer exposure: Biocidal products (PC8)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.5. Consumer exposure: Coatings and paints, thinners, paint removers (PC9a)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.6. Consumer exposure: Fillers, putties, plasters, modelling clay (PC9b)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.7. Consumer exposure: Finger paints (PC9c)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

9.3.8. Consumer exposure: Lubricants, greases, release products (PC24)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.9. Consumer exposure: Washing and cleaning products (PC35)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.3.10. Consumer exposure: Welding and soldering products, flux products (PC38)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

9.4. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 10: Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).**10.1. Title section**

Exposure Scenario name	: Use in Oil and Gas field drilling and production operations - Industrial
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Structured Short Title	: Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).
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Substance	: dodec-1-ene EC-No.: 203-968-4
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Environment

CS 1	Use in Oil and Gas field drilling and production operations - Industrial	ERC4
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
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CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
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CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
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CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
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CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8a
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CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8b
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10.2. Conditions of use affecting exposure**10.2.1. Control of environmental exposure: 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

Release type	: Continuous release
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Remarks	: Not applicable
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Technical and organisational conditions and measures

Discharge to the marine compartment prohibited.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

10.2.2. 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 temperature.

10.2.3. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

No other specific measures identified.

Other conditions affecting workers exposure

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

10.2.4. 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.

10.2.5. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

10.2.6. 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.

10.2.7. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

(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.

10.3. Exposure estimation and reference to its source**10.3.1. 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**

Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.

10.3.2. 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.

10.3.3. 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.

10.3.4. 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.

10.3.5. 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.

10.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)**Additional information on exposure estimation**

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

A quantitative risk assessment is not required for human health.

10.3.7. 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.

10.4. 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.

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Version 5.11

Revision Date 2023-10-30

ES 11: Use in Oil and Gas field drilling and production operations – Professional; Professional uses (SU22).**11.1. Title section**

Exposure Scenario name	: Use in Oil and Gas field drilling and production operations – Professional
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Structured Short Title	: Use in Oil and Gas field drilling and production operations – Professional; Professional uses (SU22).
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Substance	: dodec-1-ene EC-No.: 203-968-4
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Environment

CS 1	Use in Oil and Gas field drilling and production operations – Professional	ERC8d
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
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CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
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CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
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CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
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CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8a
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CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8b
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11.2. Conditions of use affecting exposure**11.2.1. Control of environmental exposure: 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

Release type	: Continuous release
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Remarks	: Not applicable
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Technical and organisational conditions and measures

Discharge to the marine compartment prohibited.

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Version 5.11

Revision Date 2023-10-30

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.

11.2.2. 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 temperature.

11.2.3. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

No other specific measures identified.

Other conditions affecting workers exposure

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

11.2.4. 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.

11.2.5. 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

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Version 5.11

Revision Date 2023-10-30

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.

11.2.6. 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.

11.2.7. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

(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.

11.3. Exposure estimation and reference to its source**11.3.1. Environmental release and exposure: Widespread use of non-reactive processing aid (no inclusion into or onto article, outdoor) (ERC8d)****Additional information on exposure estimation**

Quantitative exposure and risk assessment not possible due to lack of emissions to aquatic environment. Qualitative approach used to conclude safe use.

11.3.2. 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.

11.3.3. 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.

11.3.4. 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.

11.3.5. 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.

11.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)**Additional information on exposure estimation**

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

A quantitative risk assessment is not required for human health.

11.3.7. 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.

11.4. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 12: Lubricants - Industrial; Industrial uses (SU3).**12.1. Title section**

Exposure Scenario name	: Lubricants - Industrial
Structured Short Title	: Lubricants - Industrial; Industrial uses (SU3).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Lubricants - Industrial	ERC4, ERC7
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC7
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC9
CS 10	General measures applicable to all activities, General measures (skin irritants)	PROC10
CS 11	General measures applicable to all activities, General measures (skin irritants)	PROC13
CS 12	General measures applicable to all activities, General measures (skin irritants)	PROC17
CS 13	General measures applicable to all activities, General measures (skin irritants)	PROC18

12.2. Conditions of use affecting exposure

12.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4) / Use of functional fluid at industrial site (ERC7)

Product (article) characteristics

SDS Number:100000068203

109/156

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Covers percentage substance in the product up to 100 %.

Amount used (or contained in articles), frequency and duration of use/exposureMaximum allowable site tonnage : 21.739 kg/day
(MSafe)

Release type : Continuous release

Emission days : 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.

Air - minimum efficiency of 70 %

Water - minimum efficiency of 96,4 %

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

12.2.2. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

(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.

12.2.3. 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.

12.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

12.2.5. 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.

12.2.6. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

12.2.7. 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

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.

12.2.8. 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

Technical and organisational conditions and measures

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

12.2.9. 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.

12.2.10. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

12.2.11. 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.

12.2.12. Control of worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)**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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

12.2.13. Control of worker exposure: General greasing/lubrication at high kinetic energy conditions (PROC18)**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.

12.3. Exposure estimation and reference to its source**12.3.1. Environmental release and exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4) / Use of functional fluid at industrial site (ERC7)**

Protection Target	Exposure estimate	RCR
Freshwater	0,0227 µg/l (EUSES)	0,025
Sea water	0,0021 µg/l (EUSES)	0,002
Freshwater sediment	0,0544 mg/kg wet weight (EUSES)	0,025
Sea sediment	0,005 mg/kg wet weight (EUSES)	0,002

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Soil	0,0024 mg/kg wet weight (EUSES)	0,001
Air	0,0456 µg/m ³	

Additional information on exposure estimation

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

12.3.2. 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.

12.3.3. 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.

12.3.4. 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.

12.3.5. 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.

12.3.6. Worker exposure: Industrial spraying (PROC7)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

12.3.7. 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.

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

12.3.9. 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.

12.3.10. Worker exposure: Roller application or brushing (PROC10)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

12.3.11. 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.

12.3.12. Worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

12.3.13. Worker exposure: General greasing/lubrication at high kinetic energy conditions (PROC18)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

12.4. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 13: Lubricants - Professional; Professional uses (SU22).**13.1. Title section**

Exposure Scenario name	: Lubricants - Professional
Structured Short Title	: Lubricants - Professional; Professional uses (SU22).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Lubricants - Professional	ERC8a, ERC8d, ERC9a, ERC9b
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC9
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC10
CS 10	General measures applicable to all activities, General measures (skin irritants)	PROC11
CS 11	General measures applicable to all activities, General measures (skin irritants)	PROC13
CS 12	General measures applicable to all activities, General measures (skin irritants)	PROC17
CS 13	General measures applicable to all activities, General measures (skin irritants)	PROC18
CS 14	General measures applicable to all activities, General measures (skin irritants)	PROC20

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

13.2. Conditions of use affecting exposure

13.2.1. 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) / Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)

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 : 9 kg/day
(MSafe)

Release type : Wide dispersive use

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 96,4 %

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

13.2.2. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.2.3. 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.

13.2.4. 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 %.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.2.5. 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.

13.2.6. 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 %.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.2.7. 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.

13.2.8. 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 %.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.2.9. 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.

13.2.10. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.2.11. 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.

13.2.12. Control of worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)**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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.2.13. Control of worker exposure: General greasing/lubrication at high kinetic energy conditions (PROC18)**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.

13.2.14. Control of worker exposure: Use of functional fluids in small devices (PROC20)**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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

13.3. Exposure estimation and reference to its source

13.3.1. 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) / Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)

Protection Target	Exposure estimate	RCR
Freshwater	0,107 µg/l (EUSES)	0,118
Sea water	0,0105 µg/l (EUSES)	0,012
Freshwater sediment	0,255 mg/kg wet weight (EUSES)	0,119
Sea sediment	0,025 mg/kg wet weight (EUSES)	0,012
Soil	0,217 mg/kg wet weight (EUSES)	0,124
Air	0,0046 µg/m ³	

Additional information on exposure estimation

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

13.3.2. 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.

13.3.3. 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

SDS Number:100000068203

127/156

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

A quantitative risk assessment is not required for human health.

13.3.4. 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.

13.3.5. 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.

13.3.6. 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.

13.3.7. 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.

13.3.8. 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.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

13.3.12. Worker exposure: Lubrication at high energy conditions in metal working operations (PROC17)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

13.3.13. Worker exposure: General greasing/lubrication at high kinetic energy conditions (PROC18)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

13.3.14. Worker exposure: Use of functional fluids in small devices (PROC20)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

13.4. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 14: Lubricants - Consumer; Consumer uses (SU21).**14.1. Title section**

Exposure Scenario name	: Lubricants - Consumer
Structured Short Title	: Lubricants - Consumer; Consumer uses (SU21).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Lubricants - Consumer	ERC8a, ERC8d, ERC9a, ERC9b
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Consumer

CS 2	General measures applicable to all activities, General measures (skin irritants)	PC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PC24
CS 4	General measures applicable to all activities, General measures (skin irritants)	PC31

14.2. Conditions of use affecting exposure

14.2.1. 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) / Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)

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)	: 9 kg/day
Release type	: Wide dispersive use
Emission days	: 365

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Receiving surface water flow : 18.000 m3/d

Local freshwater dilution factor : 10

Local marine water dilution factor : 100

14.2.2. 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.

14.2.3. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

14.2.4. 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.

14.3. Exposure estimation and reference to its source

14.3.1. 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) / Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)

Protection Target	Exposure estimate	RCR
Freshwater	0,0915 µg/l (EUSES)	0,102
Sea water	0,0089 µg/l (EUSES)	0,001
Freshwater sediment	0,219 mg/kg wet weight (EUSES)	0,102
Sea sediment	0,0214 mg/kg wet weight (EUSES)	0,001
Soil	0,178 mg/kg wet weight (EUSES)	0,102
Air	0,0038 µg/m ³	

Additional information on exposure estimation

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

14.3.2. Consumer exposure: Adhesives, sealants (PC1)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

14.3.3. Consumer exposure: Lubricants, greases, release products (PC24)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

14.3.4. Consumer exposure: Polishes and wax blends (PC31)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

14.4. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 15: Functional Fluids - Industrial; Industrial uses (SU3).**15.1. Title section**

Exposure Scenario name	: Functional Fluids - Industrial
Structured Short Title	: Functional Fluids - Industrial; Industrial uses (SU3).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Functional Fluids - Industrial	ERC7
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC9

15.2. Conditions of use affecting exposure**15.2.1. Control of environmental exposure: Use of functional fluid at industrial site (ERC7)****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)	: 32.287 kg/day
Release type	: Continuous release
Emission days	: 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Air - minimum efficiency of 0 %
 Water - minimum efficiency of 96,4 %

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

15.2.2. 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 temperature.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

15.2.3. 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.

15.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

temperature.

15.2.5. 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.

15.2.6. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

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

15.2.7. 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.

15.2.8. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

15.3. Exposure estimation and reference to its source**15.3.1. Environmental release and exposure: Use of functional fluid at industrial site (ERC7)**

Protection Target	Exposure estimate	RCR
Freshwater	0,0232 µg/l (EUSES)	0,026
Sea water	0,0021 µg/l (EUSES)	0,002
Freshwater sediment	0,0554 mg/kg wet weight (EUSES)	0,026
Sea sediment	0,0051 mg/kg wet weight (EUSES)	0,002
Soil	0,0039 mg/kg wet weight (EUSES)	0,002
Air	0,230 µg/m ³	

Additional information on exposure estimation

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

15.3.2. 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.

15.3.3. 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.

15.3.4. 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.

15.3.5. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

15.3.6. 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.

15.3.7. 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.

15.3.8. 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.

15.4. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 16: Functional Fluids - Professional; Professional uses (SU22).**16.1. Title section**

Exposure Scenario name	: Functional Fluids - Professional
Structured Short Title	: Functional Fluids - Professional; Professional uses (SU22).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Functional Fluids - Professional	ERC9a, ERC9b
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC9
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC20

16.2. Conditions of use affecting exposure

16.2.1. Control of environmental exposure: Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)

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)	: 18 kg/day
Release type	: Wide dispersive use
Emission days	: 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Air - minimum efficiency of 0 %
 Water - minimum efficiency of 96,4 %

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

16.2.2. 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 temperature.

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Version 5.11

Revision Date 2023-10-30

16.2.3. 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.

16.2.4. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

temperature.

16.2.5. 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.

16.2.6. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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

16.2.7. Control of worker exposure: Use of functional fluids in small devices (PROC20)**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.

16.3. Exposure estimation and reference to its source**16.3.1. Environmental release and exposure: Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)**

Protection Target	Exposure estimate	RCR
Freshwater	0,086 µg/l (EUSES)	0,096
Sea water	0,0084 µg/l (EUSES)	0,009
Freshwater sediment	0,206 mg/kg wet weight (EUSES)	0,096
Sea sediment	0,0201 mg/kg wet weight (EUSES)	0,009
Soil	0,164 mg/kg wet weight (EUSES)	0,094
Air	0,0230 µg/m ³	

Additional information on exposure estimation

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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

16.3.2. 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.

16.3.3. 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.

16.3.4. 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.

16.3.5. 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.

16.3.6. 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.

16.3.7. Worker exposure: Use of functional fluids in small devices (PROC20)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

16.4. 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-DODECENE

Version 5.11

Revision Date 2023-10-30

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

ES 17: Use in polymer production – industrial; Industrial uses (SU3).**17.1. Title section**

Exposure Scenario name	: Use in polymer production – industrial
Structured Short Title	: Use in polymer production – industrial; Industrial uses (SU3).
Substance	: dodec-1-ene EC-No.: 203-968-4

Environment

CS 1	Use in polymer production – industrial	ERC4, ERC6c
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1
CS 3	General measures applicable to all activities, General measures (skin irritants)	PROC2
CS 4	General measures applicable to all activities, General measures (skin irritants)	PROC3
CS 5	General measures applicable to all activities, General measures (skin irritants)	PROC4
CS 6	General measures applicable to all activities, General measures (skin irritants)	PROC5
CS 7	General measures applicable to all activities, General measures (skin irritants)	PROC6
CS 8	General measures applicable to all activities, General measures (skin irritants)	PROC8a
CS 9	General measures applicable to all activities, General measures (skin irritants)	PROC8b
CS 10	General measures applicable to all activities, General measures (skin irritants)	PROC14
CS 11	General measures applicable to all activities, General measures (skin irritants)	PROC15

17.2. Conditions of use affecting exposure

17.2.1. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Maximum allowable site tonnage : 42.735 kg/day
(MSafe)

Release type : Continuous release

Emission days : 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by soil.

Air - minimum efficiency of 80 %

Water - minimum efficiency of 96,4 %

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

17.2.2. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Other conditions affecting workers exposure

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

17.2.3. 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.

17.2.4. 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 /

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

17.2.5. 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.

17.2.6. 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 /

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

17.2.7. Control of worker exposure: Calendering operations (PROC6)**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.

17.2.8. 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

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 /

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

17.2.9. 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.

17.2.10. 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

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

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.

17.2.11. 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.

17.3. Exposure estimation and reference to its source

17.3.1. 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)

Protection Target	Exposure estimate	RCR
Freshwater	0,330 µg/l (EUSES)	0,366
Sea water	0,0328 µg/l (EUSES)	0,036
Freshwater sediment	0,789 mg/kg wet weight (EUSES)	0,368
Sea sediment	0,0784 mg/kg wet weight (EUSES)	0,037
Soil	0,815 mg/kg wet weight (EUSES)	0,468
Air	0,0111 mg/m ³	

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

Additional information on exposure estimation

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

17.3.2. 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.

17.3.3. 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.

17.3.4. 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.

17.3.5. 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.

17.3.6. Worker exposure: Mixing or blending in batch processes (PROC5)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

17.3.7. Worker exposure: Calendering operations (PROC6)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

17.3.8. 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.

AlphaPlus® 1-DODECENE

Version 5.11

Revision Date 2023-10-30

17.3.9. 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.

17.3.10. Worker exposure: Tableting, compression, extrusion, pelettisation, granulation (PROC14)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

17.3.11. Worker exposure: Use as laboratory reagent (PROC15)**Additional information on exposure estimation**

A quantitative risk assessment is not required for human health.

17.4. 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>).