AlphaPlus® 1-Decene

Version 2.16 Revision Date 2024-01-03

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-Decene
Material : 1128500, 1095875, 1068252, 1037000, 1015428, 1036999

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
1-Decene	872-05-9 212-819-2	Chevron Phillips Chemical Company LP 01-2119486878-12-0006

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 in Oil and Gas field drilling and production operations - Industrial
Use in polymer production – industrial

1.3

Details of the supplier of the safety data sheet

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

Local : Chevron Phillips Chemicals International N.V.
Airport Plaza (Stockholm Building)
Leonardo Da 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 (Giftlinjen): +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

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

SECTION 2: Hazards identification

2.1

Classification of the substance or mixture

REGULATION (EC) No 1272/2008

Flammable liquids, Category 3	H226: Flammable liquid and vapor.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters airways.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

2.2

Labeling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Signal Word : Danger

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

Precautionary Statements		
:	**Prevention:**	
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P273	Avoid release to the environment.
	Response:	
	P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
	P331	Do NOT induce vomiting.
	P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
	P391	Collect spillage.

Hazardous ingredients which must be listed on the label:

- 872-05-9 1-Decene

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.

SECTION 3: Composition/information on ingredients

3.1 - 3.2
Substance or Mixture

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

Molecular formula : C10H20

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]	Specific Conc. Limits, M-factors and ATEs
1-Decene	**872-05-9** **212-819-2**	Flam. Liq. 3; H226 Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	96 - 100	M [Acute]=1 M [Chronic]=1
2-Butyl-1-Hexene	6795-79-5	Flam. Liq. 3; H226 Asp. Tox. 1; H304	1 - 5	
2-Ethyl-1-Octene	51655-64-2	Flam. Liq. 3; H226 Asp. Tox. 1; H304	1 - 5	

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 data available.

Risks : No data available.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : No data available.

SECTION 5: Firefighting measures

Flash point : 49°C (120°F)
Method: closed cup

Autoignition temperature : 210°C (410°F)

5.1

Extinguishing media

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

Unsuitable extinguishing media : High volume water jet.

5.2

Special hazards arising from the substance or mixture

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

5.3

Advice for firefighters

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

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection : Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products : Carbon oxides.

SECTION 6: Accidental release measures

6.1

Personal precautions, protective equipment and emergency procedures

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

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).

6.4

Reference to other sections

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

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. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

7.2

Conditions for safe storage, including any incompatibilities

Storage

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

8.1

Control parameters

PNEC : Fresh water
Value: 0,0012 mg/l

PNEC	:	Sea water Value: 0,0012 mg/l
PNEC	:	Fresh water sediment Value: 2,14 mg/kg
PNEC	:	Sea sediment Value: 2,14 mg/kg
PNEC	:	Soil Value: 0,43 mg/kg

8.2

Exposure controls
Engineering measures

Adequate ventilation to control airborned 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 retardant antistatic protective clothing. Workers should wear antistatic footwear.
Hygiene measures	:	When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

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

SECTION 9: Physical and chemical properties

9.1

Information on basic physical and chemical properties

Appearance

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

Safety data

Flash point	:	49°C (120°F) Method: closed cup
Lower explosion limit	:	0,7 %(V)
Upper explosion limit	:	5,9 %(V)
Oxidizing properties	:	no
Autoignition temperature	:	210°C (410°F)
Thermal decomposition	:	No data available
Molecular formula	:	C10H20
Molecular weight	:	140,3 g/mol
pH	:	Not applicable
Freezing point	:	-66°C (-87°F)
Pour point		No data available
Boiling point/boiling range	:	170,56°C (339,01°F)
Vapor pressure	:	0,21 kPa at 25°C (77°F) 2,30 kPa at 65°C (149°F)
Relative density	:	0,75 at 15,6 °C (60,1 °F)
Density	:	745 kg/m3 at 15°C (59°F) 740 kg/m3 at 20°C (68°F) 717 kg/m3

		at 50°C (122°F)
Water solubility	:	Soluble in hydrocarbon solvents; insoluble in water.
Partition coefficient: n-octanol/water	:	No data available
Viscosity, kinematic	:	1,1 cSt at 20°C (68°F)
Relative vapor density	:	4,84 (Air = 1.0)
Evaporation rate	:	No data available

SECTION 10: Stability and reactivity

10.1

Reactivity : Stable at normal ambient temperature and pressure.

10.2

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

10.3

Possibility of hazardous reactions

Hazardous reactions : Hazardous reactions: Hazardous polymerization does not occur.

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

Hazardous reactions: Vapors may form explosive mixture with air.

10.4

Conditions to avoid : Heat, flames and sparks.

10.5

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

Thermal decomposition : No data available

10.6

Hazardous decomposition products : Carbon oxides

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

SECTION 11: Toxicological information

11.1

Information on toxicological effects

Acute oral toxicity

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

Acute inhalation toxicity

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

Acute dermal toxicity

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

Skin irritation

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

Eye irritation

1-Decene : No eye irritation

Sensitization

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

Repeated dose toxicity

1-Decene : Species: Rat, Male and female
Sex: Male and female
Application Route: Oral
Dose: 0, 100, 500, 1000 mg/kg
Exposure time: 13 wks

Number of exposures: 7 d/wk
NOEL: 1.000 mg/kg
Method: 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 wks
Number of exposures: 6 hr/d, 5 d/wk
NOEL: 3000 ppm
Method: OECD Guideline 413
Information given is based on data obtained from similar substances.

Genotoxicity in vitro

1-Decene : Test Type: Ames test
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Escherichia coli - reverse mutation assay)
Result: negative

Test Type: Mammalian cell gene mutation assay
Metabolic activation: with and without metabolic activation
Method: OECD Guideline 476
Result: negative

Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Method: OECD Guideline 473
Result: negative

Genotoxicity in vivo

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

Reproductive toxicity

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

AlphaPlus® 1-Decene
Aspiration toxicity : May be fatal if swallowed and enters airways.
Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

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

11.2

Information on other hazards

AlphaPlus® 1-Decene

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-Decene : LC50: 0,12 mg/l
Exposure time: 96 h
Species: Oncorhynchus mykiss (rainbow trout)
semi-static test Method: OECD Test Guideline 203
Information given is based on data obtained from similar substances.

Toxicity to daphnia and other aquatic invertebrates

1-Decene : EC50: 0,56 - 1 mg/l
Exposure time: 48 h
Species: Daphnia
Method: OECD Test Guideline 202

Toxicity to algae

1-Decene : EC50: 1 - 1,8 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (microalgae)
Method: OECD Test Guideline 201

M-Factor

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

M-Factor (Chron. Aquat. Tox.) 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)

1-Decene	:	NOEC: 0,0194 mg/l Exposure time: 21 d Species: Daphnia magna (Water flea) Analytical monitoring: yes Test substance: yes Method: OECD Test Guideline 211

12.2
Persistence and degradability

Biodegradability	:	This material is expected to be readily biodegradable.

12.3
Bioaccumulative potential
Elimination information (persistence and degradability)

Bioaccumulation

1-Decene	:	No data available

12.4
Mobility in soil

Mobility

1-Decene	:	No data available

12.5
Results of PBT and vPvB assessment

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

12.8
Additional Information

Ecotoxicology Assessment

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

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

SECTION 13: Disposal considerations

13.1

Waste treatment methods

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

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

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

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

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

SECTION 14: Transport information

14.1 - 14.7

Transport information

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

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

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III, (49 °C c.c.), MARINE POLLUTANT, (1-DECENE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III

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

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

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, III, ENVIRONMENTALLY HAZARDOUS, (1-DECENE)
For Tank Vessels and/or Barges:
UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, (N1, F), III, ENVIRONMENTALLY HAZARDOUS, (1-Decene)

Other information	**:**	**Decene, S.T.2, Cat. X**

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 3 highly water endangering

15.2

Chemical Safety Assessment

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

Major Accident Hazard Legislation : 96/82/EC Update: 2003
Flammable.
6
Quantity 1: 5.000 t
Quantity 2: 50.000 t

: 96/82/EC Update: 2003
Dangerous for the environment
9a
Quantity 1: 100 t

Quantity 2: 200 t

: ZEU_SEVES3 Update:
FLAMMABLE LIQUIDS
P5c
Quantity 1: 5.000 t
Quantity 2: 50.000 t

: 96/82/EC Update: 2003
Flammable.
6
Quantity 1: 5.000 t
Quantity 2: 50.000 t

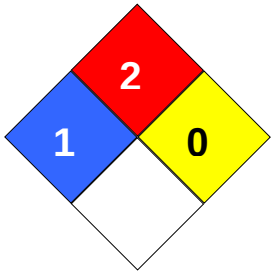
: ZEU_SEVES3 Update:
ENVIRONMENTAL HAZARDS
E1
Quantity 1: 100 t
Quantity 2: 200 t

Notification status

Europe REACH	:	This product is in full compliance according to REACH regulation 1907/2006/EC.
Switzerland CH INV	:	On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	:	On or in compliance with the active portion of the TSCA inventory
Canada DSL	:	All components of this product are on the Canadian DSL
Australia 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
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).
Philippines PICCS	:	On the inventory, or in compliance with the inventory
Taiwan TCSI	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

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



Further information

Legacy SDS Number : PE0018

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
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.

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

Annex: Exposure Scenarios

Table of Contents

ES 1: Manufacture; Industrial uses (SU3).

1.1. Title section

Exposure Scenario name	:	Manufacture
Structured Short Title	:	Manufacture; Industrial uses (SU3).
Substance	:	dec-1-ene EC-No.: 212-819-2

Environment		
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 the substance (ERC1) / Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Amount used (or contained in articles), frequency and duration of use/exposure		
Maximum allowable site tonnage (MSafe)	:	352.467 kg/day
Release type	:	Continuous release
Emission days	:	300
Technical and organisational conditions and measures		

Risk from environmental exposure is driven by freshwater. Air - minimum efficiency of 90 % Water - minimum efficiency of 97,4 %		
Conditions and measures related to sewage treatment plant		
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.

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

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		

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		

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 the substance (ERC1) / Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

Protection Target	Exposure estimate	RCR
Freshwater	0,795 µg/l (EUSES)	0,662
Sea water	0,302 µg/l (EUSES)	0,252
Freshwater sediment	0,306 mg/kg wet weight (EUSES)	0,658
Sea sediment	0,116 mg/kg wet weight (EUSES)	0,250
Soil	0,0117 mg/kg wet weight (EUSES)	0,301
Air	0,0649 mg/m³	

Additional information on exposure estimation
Common practices vary across sites thus conservative process release estimates used.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

2.1. Title section

Exposure Scenario name	:	Use as an intermediate
Structured Short Title	:	Use as an intermediate; Industrial uses (SU3).
Substance	:	dec-1-ene EC-No.: 212-819-2

Environment		
CS 1	**Use as an intermediate**	ERC6a
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)	:	51.813 kg/day
Release type	:	Continuous release
Emission days	:	300
Technical and organisational conditions and measures		
Risk from environmental exposure is driven by soil.		

Air - minimum efficiency of 80 % Water - minimum efficiency of 97,4 %		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal sewage treatment plant
STP sludge treatment	:	Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
STP effluent	:	2.000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

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.

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

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		

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		

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	0,433 µg/l (EUSES)	0,361
Sea water	0,0426 µg/l (EUSES)	0,036
Freshwater sediment	0,167 mg/kg wet weight (EUSES)	0,359
Sea sediment	0,0164 mg/kg wet weight (EUSES)	0,035
Soil	0,220 mg/kg wet weight (EUSES)	0,579
Air	0,0017 mg/m³	

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.

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).

ES 3: Formulation; Industrial uses (SU3).

3.1. Title section

Exposure Scenario name	:	Formulation
Structured Short Title	:	Formulation; Industrial uses (SU3).
Substance	:	dec-1-ene EC-No.: 212-819-2

Environment		
CS 1	**Formulation**	ERC2
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)**	PROC14
CS 10	**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 (MSafe)	:	91.503 kg/day
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 97,4 %

Conditions and measures related to sewage treatment plant

STP type	:	Municipal sewage treatment plant
STP sludge treatment	:	Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
STP effluent	:	2.000 m3/d

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

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

Other conditions affecting environmental exposure

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

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

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

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

Duration	:	Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

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

Other conditions affecting workers exposure

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

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 / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		
Other conditions affecting workers exposure		
Temperature	:	Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		
Other conditions affecting workers exposure		
Temperature	:	Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		
Other conditions affecting workers exposure		
Temperature	:	Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		

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

3.3. Exposure estimation and reference to its source

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

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

Additional information on exposure estimation
Common practices vary across sites thus conservative process release estimates used.

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

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

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

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

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

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

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

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

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

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 dedicated facilities (PROC8b)

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 into small containers (dedicated filling line, including weighing) (PROC9)

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

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

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

3.3.10. 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).

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

4.1. Title section

Exposure Scenario name	:	Use in coatings – industrial
Structured Short Title	:	Use in coatings – industrial; Industrial uses (SU3).
Substance	:	dec-1-ene EC-No.: 212-819-2

Environment		
CS 1	**Use in coatings – industrial**	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)**	PROC5
CS 7	**General measures applicable to all activities, General measures (skin irritants)**	PROC7
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)**	PROC9
CS 11	**General measures applicable to all activities, General measures (skin irritants)**	PROC10
CS 12	**General measures applicable to all activities, General measures (skin irritants)**	PROC13
CS 13	**General measures applicable to all activities, General measures (skin irritants)**	PROC14
CS 14	**General measures applicable to all activities, General measures (skin irritants)**	PROC15

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)

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)	:	19.491 kg/day
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 97,4 %		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal sewage treatment plant
STP sludge treatment	:	Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
STP effluent	:	2.000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

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		

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

Technical and organisational conditions and measures
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure
Temperature : Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure
Duration : Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure
Temperature : Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure
Duration : Covers daily exposures up to 8 hours

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

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

Technical and organisational conditions and measures
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure
Temperature : Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure
Duration : Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
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

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: Tabletting, compression, extrusion, pelettisation, granulation (PROC14)

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure
Duration : Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure
Temperature : Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure
Duration : Covers daily exposures up to 8 hours

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

Other conditions affecting workers exposure		
Temperature	:	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	0,334 µg/l (EUSES)	0,278
Sea water	0,0326 µg/l (EUSES)	0,027
Freshwater sediment	0,129 mg/kg wet weight (EUSES)	0,276
Sea sediment	0,0126 mg/kg wet weight (EUSES)	0,027
Soil	0,216 mg/kg wet weight (EUSES)	0,570
Air	0,303 mg/m³	

Additional information on exposure estimation
Common practices vary across sites thus conservative process release estimates used.

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

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

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

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

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

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

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

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

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

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

4.3.7. Worker exposure: Industrial spraying (PROC7)

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

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

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

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

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

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

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

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

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

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

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

4.3.13. Worker exposure: Tabletting, 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).

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

Environment		
CS 1	**Use in coatings – professional**	ERC8a, ERC8d
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)

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)	:	52 kg/day
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 97,4 %		
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal sewage treatment plant
STP sludge treatment	:	Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
STP effluent	:	2.000 m3/d
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m3/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

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		

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

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

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

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

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

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	0,334 µg/l (EUSES)	0,278
Sea water	0,0326 µg/l (EUSES)	0,027
Freshwater sediment	0,129 mg/kg wet weight (EUSES)	0,276

Sea sediment	0,0126 mg/kg wet weight (EUSES)	0,027
Soil	0,163 mg/kg wet weight (EUSES)	0,431
Air	0,0061 mg/m³	

Additional information on exposure estimation
Common practices vary across sites thus conservative process release estimates used.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Environment		
CS 1	**Use in Coatings - Consumer**	ERC8a, ERC8d
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)

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)	:	52 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		

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 %.		

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

		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

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

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

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

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

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

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

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	0,283 µg/l (EUSES)	0,236
Sea water	0,0276 µg/l (EUSES)	0,023
Freshwater sediment	0,109 mg/kg wet weight (EUSES)	0,235
Sea sediment	0,0106 mg/kg wet weight (EUSES)	0,023
Soil	0,135 mg/kg wet weight (EUSES)	0,355
Air	0,005 mg/m³	

Additional information on exposure estimation

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

6.3.2. Consumer exposure: Adhesives, sealants (PC1)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

6.3.4. Consumer exposure: Biocidal products (PC8)

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

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

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

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

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

6.3.7. Consumer exposure: Finger paints (PC9c)

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

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

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

6.3.9. Consumer exposure: Ink and toners (PC18)

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

6.3.10. Consumer exposure: Leather treatment products (PC23)

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

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

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

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).

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

7.1. Title section

Exposure Scenario name	:	Use in Oil and Gas field drilling and production operations - Industrial
Structured Short Title	:	Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).
Substance	:	dec-1-ene EC-No.: 212-819-2

Environment		
CS 1	**Use in Oil and Gas field drilling and production operations - Industrial**	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

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		
Release type	:	Continuous release
Remarks	:	Not applicable
Technical and organisational conditions and measures		
Discharge to aquatic environment is restricted (see section 4.2).		

Conditions and measures related to sewage treatment plant		
STP type	:	Municipal sewage treatment plant
STP sludge treatment	:	Prevent environmental discharge consistent with regulatory requirements.

Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.

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

Product (article) characteristics		
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.

7.2.3. 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.

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

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

7.2.5. 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.

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

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

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

Duration	:	Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

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

Other conditions affecting workers exposure

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

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

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

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

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

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)

Additional information on exposure estimation

There are no expected releases to the environment from this use, so no exposure assessment is made.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

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

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

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

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

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

ES 8: Use in polymer production – industrial; Industrial uses (SU3).

8.1. Title section

Exposure Scenario name	:	Use in polymer production – industrial
Structured Short Title	:	Use in polymer production – industrial; Industrial uses (SU3).
Substance	:	dec-1-ene EC-No.: 212-819-2

Environment		
CS 1	**Use in polymer production – industrial**	ERC4, ERC6c
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)**	PROC21

8.2. Conditions of use affecting exposure

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Amount used (or contained in articles), frequency and duration of use/exposure

Maximum allowable site tonnage (MSafe)	:	51.203 kg/day
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 97,4 %

Conditions and measures related to sewage treatment plant

STP type	:	Municipal sewage treatment plant
STP sludge treatment	:	Prevent discharge of undissolved substance to or recover from wastewater. Do not apply industrial sludge to natural soils. Sewage sludge should be incinerated, contained or reclaimed.
STP effluent	:	2.000 m3/d

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

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

Other conditions affecting environmental exposure

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

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

Product (article) characteristics

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.

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.		
Other conditions affecting workers exposure		
Temperature	:	Assumes use at not more than 20°C above ambient temperature.

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

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure		
Duration	:	Covers daily exposures up to 8 hours
Technical and organisational conditions and measures		
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent /		

minimise exposures and to report any skin problems that may develop. No other specific measures identified.

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

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

Product (article) characteristics		
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: Mixing or blending in batch processes (PROC5)

Product (article) characteristics		
Covers percentage substance in the product up to 100 %.		
Physical form of product	:	Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure

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

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

minimise exposures and to report any skin problems that may develop. No other specific measures identified.

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

8.2.7. 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.

8.2.8. 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 /

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.

8.2.9. 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.

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

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

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

Product (article) characteristics
Covers percentage substance in the product up to 100 %.
Physical form of product : Liquid, vapour pressure < 0.5 kPa at Standard Temperature and Pressure
Amount used (or contained in articles), frequency and duration of use/exposure
Duration : Covers daily exposures up to 8 hours
Technical and organisational conditions and measures
Do not ingest. If swallowed then seek immediate medical assistance. Avoid direct skin contact with product. Identify potential areas for indirect skin contact. Wear gloves (tested to EN374) if hand contact with substance likely. Clean up contamination/spills as soon as they occur. Wash off any skin contamination immediately. Provide basic employee training to prevent / minimise exposures and to report any skin problems that may develop. No other specific measures identified.
Other conditions affecting workers exposure
Temperature : Assumes use at not more than 20°C above ambient temperature.

8.3. Exposure estimation and reference to its source

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

Protection Target	Exposure estimate	RCR
Freshwater	0,476 µg/l (EUSES)	0,396
Sea water	0,0468 µg/l (EUSES)	0,039
Freshwater sediment	0,183 mg/kg wet weight (EUSES)	0,394
Sea sediment	0,018 mg/kg wet weight (EUSES)	0,039
Soil	0,247 mg/kg wet weight (EUSES)	0,651
Air	0,0185 mg/m³	

Additional information on exposure estimation
Common practices vary across sites thus conservative process release estimates used.

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

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

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

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

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

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

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

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

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

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

8.3.7. Worker exposure: Calendering operations (PROC6)

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

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

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

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

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

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

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

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

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

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

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

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