

AlphaPlus® 1-Octene

Version 2.11

Revision Date 2020-03-04

According to Regulation (EC) No. 1907/2006, Regulation (EC) No. 2015/830

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

Product Name : AlphaPlus® 1-Octene
 Material : 1117428, 1064097, 1021765, 1015426, 1037082

EC-No.Registration number

Chemical name	CAS-No. EC-No. Index No.	Legal Entity Registration number
1-Octene	111-66-0 203-893-7	Chevron Phillips Chemical Company LP 01-2119486877-14-0006

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

Relevant Identified Uses Supported : Manufacture
 Formulation
 Use in polymer production – industrial
 Use as an intermediate
 Use in Oil and Gas field drilling and production operations - Industrial
 Use as a fuel - industrial
 Use as a fuel – professional
 Lubricants - Industrial
 Metal working fluids / rolling oils - 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

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SDS Requests: (800) 852-5530
 Technical Information: (832) 813-4862
 Responsible Party: Product Safety Group
 Email:sds@cpchem.com

1.4**Emergency telephone:****Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

Transport:

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

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

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

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

SECTION 2: Hazards identification**2.1****Classification of the substance or mixture
REGULATION (EC) No 1272/2008**

Flammable liquids, Category 2

H225:

Highly 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 :

H225

Highly flammable liquid and vapor.

H304

May be fatal if swallowed and enters airways.

H410

Very toxic to aquatic life with long lasting effects.

Precautionary Statements :

Prevention:

P210

Keep away from heat/ sparks/ open flames/
hot surfaces. No smoking.

P233

Keep container tightly closed.

P240

Ground/bond container and receiving

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P243	equipment. Take precautionary measures against static discharge.
P273	Avoid release to the environment.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:	
P301 + P310	IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P303 + P361 + P353	IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P331	Do NOT induce vomiting.
Storage:	
P403 + P235	Store in a well-ventilated place. Keep cool.

Hazardous ingredients which must be listed on the label:

- 111-66-0 1-Octene

Additional Labeling:

EUH066 Repeated exposure may cause skin dryness or cracking.

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

Synonyms : Octene-n-1
Octene-1 (C8)
AlphaPlus™ NAO 8
C8H16

Molecular formula : C8H16

Hazardous ingredients

Chemical name	CAS-No. EC-No. Index No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [wt%]
1-Octene	111-66-0 203-893-7	Flam. Liq. 2; H225 Asp. Tox. 1; H304 Aquatic Acute 1; H400 Aquatic Chronic 1; H410	95 - 100
2-Ethyl-1-Hexene	1632-16-2 216-636-9	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H336 Asp. Tox. 1; H304 Aquatic Chronic 2; H411	1 - 5

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

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

- General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.
- In case of skin contact : If on skin, rinse well with water. If on clothes, remove clothes.
- In case of eye contact : Flush eyes with water as a precaution. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Do not ingest. If swallowed then seek immediate medical assistance. Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : 13°C (55°F)
Method: Tag closed cup

Autoignition temperature : 221°C (430°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.

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- Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. 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.
- A quantitative risk assessment is not required for human health.

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

- Advice on safe handling : Electrostatic charge may accumulate and create a hazardous condition when handling this material. To minimize this hazard, bonding and grounding may be necessary, but may not by themselves be sufficient. Review all operations, which have the potential to generating and accumulation of electrostatic charge and/or a flammable atmosphere (including tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate mitigating procedures. For more information, refer to OSHA Standard 29 CFR 1910.106 "Flammable and Combustible Liquids"; National Fire Protection Association (NFPA 77), "Recommended Practice on

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Static Electricity"; and/or the American Petroleum Institute (API) Recommended Practice 2003, "Protection Against Ignitions Arising Out of Static, Lightning, and stray Currents".

Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. 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: 0,012 mg/l

PNEC : Fresh water
Value: 0,012 mg/l

PNEC : Sea water
Value: 0,012 mg/l

PNEC : Fresh water sediment
Value: 6,06 mg/kg

PNEC : Sea sediment
Value: 6,06 mg/kg

PNEC : Soil
Value: 1,25 mg/kg

8.2**Exposure controls
Engineering measures**

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

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Personal protective equipment

- Respiratory protection : Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.
- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to EN374 and provide employee skin care programmes.
- 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.

A quantitative risk assessment is not required for human health.

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 : 13°C (55°F)
 Method: Tag closed cup
- Lower explosion limit : 0,7 %(V)
- Upper explosion limit : 6,8 %(V)

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Oxidizing properties	: no
Autoignition temperature	: 221°C (430°F)
Molecular formula	: C ₈ H ₁₆
Molecular weight	: 112,24 g/mol
pH	: No data available
Pour point	: Not applicable
Boiling point/boiling range	: 121°C (250°F)
Vapor pressure	: 1,75 kPa at 20°C (68°F)
	15,30 kPa at 65°C (149°F)
Relative density	: 0,72 at 15,6 °C (60,1 °F)
Density	: 719 kg/m ³ at 15°C (59°F)
	710 kg/m ³ at 20°C (68°F)
	690 kg/m ³ at 50°C (122°F)
Water solubility	: Soluble in hydrocarbon solvents; insoluble in water.
Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: 0,38 cSt at 40°C (104°F)
Relative vapor density	: 3,9 (Air = 1.0)
Evaporation rate	: No data available
Percent volatile	: > 99 %

9.2**Other information**

Conductivity	: 2,9 pSm Method: ASTM D4308
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SECTION 10: Stability and reactivity**10.1**

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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, sparks, fire, and oxidizing agents.

10.5

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

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-Octene : LD50: > 10.000 mg/kg
Species: Rat
Sex: male and female
Method: Fixed Dose Method

Acute inhalation toxicity

1-Octene : LC50: 40,2 mg/l
Exposure time: 4 h
Species: Rat
Sex: male
Test atmosphere: vapor
Method: OECD Test Guideline 403

Acute dermal toxicity

1-Octene : LD50: > 2.000 mg/kg

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Species: Rabbit
 Sex: male and female
 Method: OECD Test Guideline 402

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Skin irritation**

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

**AlphaPlus® 1-Octene
Eye irritation**

: No eye irritation.

Sensitization

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

Repeated dose toxicity

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

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

Genotoxicity in vitro

1-Octene : Test Type: Ames test
 Result: negative

Test Type: Chromosome aberration test in vitro
 Result: negative

Test Type: Cell transformation assay
 Result: negative

Genotoxicity in vivo

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

Reproductive toxicity

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

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

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

**AlphaPlus® 1-Octene
Further information**

: Solvents may degrease the skin.

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

1-Octene : LC50: 0,87 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-Octene : EC50: 1 mg/l
Exposure time: 48 h

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Species: Daphnia magna (Water flea)
static test Method: OECD Test Guideline 202
Information given is based on data obtained from similar substances.

Toxicity to algae

1-Octene : EC50: 1 - 10 mg/l
Exposure time: 96 h
Species: Pseudokirchneriella subcapitata (microalgae)
Method: OECD Test Guideline 201
Information given is based on data obtained from similar substances.

M-Factor

1-Octene : M-Factor (Acute Aquat. Tox.) 1

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-Octene : Bioconcentration factor (BCF): 1.259
Method: QSAR modeled data

12.4**Mobility in soil**

Mobility

1-Octene : No data available

12.5**Results of PBT and vPvB assessment**

Results of PBT assessment

1-Octene : Non-classified PBT substance, Non-classified vPvB substance

12.6**Other adverse effects**

Additional ecological information

: Very toxic to aquatic life with long lasting effects.

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

Ecotoxicology Assessment

Short-term (acute) aquatic hazard

1-Octene : Very toxic to aquatic life.

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2-Ethyl-1-Hexene : Toxic to aquatic life.

Long-term (chronic) aquatic hazard

1-Octene : Very toxic to aquatic life with long lasting effects.

2-Ethyl-1-Hexene : 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.

A quantitative risk assessment is not required for human health.

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, II

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, II, (13°C), MARINE POLLUTANT, (1-OCTENE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

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

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

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (1-OCTENE)

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

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, II, ENVIRONMENTALLY HAZARDOUS, (1-OCTENE)

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

UN3295, HYDROCARBONS, LIQUID, N.O.S., 3, II, ENVIRONMENTALLY HAZARDOUS, (1-OCTENE)

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

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

Commission Regulation (EU) 2015/830 of 28 May 2015 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 contaminating class (Germany) : WGK 3 highly water endangering**15.2****Chemical Safety Assessment****Components** : oct-1-ene A Chemical Safety Assessment 203-893-7 has been carried out for this substance.**Major Accident Hazard Legislation** : 96/82/EC Update: 2003
Highly flammable
7b
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**Notification status**

Europe REACH : This product is in full compliance according to REACH

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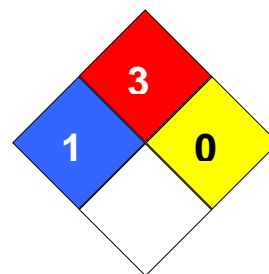
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	regulation 1907/2006/EC.
Switzerland CH INV	: On the inventory, or in compliance with the inventory
United States of America (USA) TSCA	: On or in compliance with the active portion of the TSCA inventory
Canada DSL	: All components of this product are on the Canadian DSL
Australia AICS	: On the inventory, or in compliance with the inventory
New Zealand NZIoC	: On the inventory, or in compliance with the inventory
Japan ENCS	: On the inventory, or in compliance with the inventory
Korea KECI	: All substances in this product were registered, notified to be registered, or exempted from registration by CPChem through an Only Representative according to K-REACH regulations. Importation of this product is permitted if the Korean Importer of Record was included on CPChem's notifications or if the Importer of Record themselves notified the substances.
Philippines PICCS	: On the inventory, or in compliance with the inventory
China IECSC	: On the inventory, or in compliance with the inventory
Taiwan TCSI	: On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 3
Reactivity Hazard: 0

**Further information**

Legacy SDS Number : PE0017

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%
AICS	Australia, Inventory of Chemical Substances	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

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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%		

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

H225	Highly flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H336	May cause drowsiness or dizziness.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

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Annex: Exposure Scenarios**Table of Contents**

Number	Title
ES 1	Manufacture; Industrial uses (SU3).
ES 2	Formulation; Industrial uses (SU3).
ES 3	Use in polymer production – industrial; Industrial uses (SU3).
ES 4	Use as an intermediate; Industrial uses (SU3).
ES 5	Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).
ES 6	Use as a fuel - industrial; Industrial uses (SU3).
ES 7	Use as a fuel – professional; Professional uses (SU22).
ES 8	Lubricants - Industrial; Industrial uses (SU3).
ES 9	Metal working fluids / rolling oils - Industrial; Industrial uses (SU3).

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ES 1: Manufacture; Industrial uses (SU3).**1.1. Title section**

Exposure Scenario name	: Manufacture
Structured Short Title	: Manufacture; Industrial uses (SU3).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

CS 1	Manufacture	ERC1, ERC4
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15
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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)****Amount used (or contained in articles), frequency and duration of use/exposure**

Maximum allowable site tonnage (MSafe)	: 1.077.586 kg
Critical compartment for Msafe	: Sewage treatment plant
Release type	: Continuous release
Emission days	: 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.
Air - minimum efficiency of 90 %
Water - minimum efficiency of 97,2 %

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

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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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / 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 - 10 kPa at 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

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Air	0,29 mg/m ³ (EUSES)	
Freshwater	0,00266 mg/l (EUSES)	0,222
Freshwater sediment	0,307 mg/kg wet weight (EUSES)	0,116
Sea water	0,00106 mg/l (EUSES)	0,089
Sea sediment	0,123 mg/kg wet weight (EUSES)	0,010
Soil	0,0353 mg/kg wet weight (EUSES)	0,032

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by freshwater sediment.

1.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / 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>).

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ES 2: Formulation; Industrial uses (SU3).**2.1. Title section**

Exposure Scenario name	: Formulation
Structured Short Title	: Formulation; Industrial uses (SU3).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

CS 1	Formulation	ERC2
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC4, PROC5, PROC8a, PROC8b, PROC9, PROC14, PROC15
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2.2. Conditions of use affecting exposure**2.2.1. Control of environmental exposure: Formulation into mixture (ERC2)****Amount used (or contained in articles), frequency and duration of use/exposure**

Maximum allowable site tonnage (MSafe)	: 138.601 kg
Critical compartment for Msafe	: Sewage treatment plant
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 97,2 %

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.

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STP effluent : Sewage sludge should be incinerated, contained or reclaimed.
: 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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / 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 - 10 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

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

Other conditions affecting workers exposure

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

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2.3. Exposure estimation and reference to its source**2.3.1. Environmental release and exposure: Formulation into mixture (ERC2)**

Protection Target	Exposure estimate	RCR
Air	0,385 mg/m ³ (EUSES)	
Freshwater	0,00189 mg/l (EUSES)	0,158
Freshwater sediment	0,218 mg/kg wet weight (EUSES)	0,083
Sea water	0,000189 mg/l (EUSES)	0,016
Sea sediment	0,0218 mg/kg wet weight (EUSES)	0,002
Soil	0,195 mg/kg wet weight (EUSES)	0,481

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by soil.

2.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / 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>).

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ES 3: Use in polymer production – industrial; Industrial uses (SU3).**3.1. Title section**

Exposure Scenario name	: Use in polymer production – industrial
Structured Short Title	: Use in polymer production – industrial; Industrial uses (SU3).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

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

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC14, PROC15
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3.2. Conditions of use affecting exposure

3.2.1. 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)

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

Maximum allowable site tonnage (MSafe)	: 100.704 kg
Critical compartment for Msafe	: Sewage treatment plant
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 97,2 %

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

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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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Calendring operations (PROC6) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / 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 - 10 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

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

Other conditions affecting workers exposure

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

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3.3. Exposure estimation and reference to its source

3.3.1. 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
Air	0,0346 mg/m ³ (EUSES)	
Freshwater	0,00284 mg/l (EUSES)	0,237
Freshwater sediment	0,327 mg/kg wet weight (EUSES)	0,124
Sea water	0,000284 µg/l (EUSES)	0,024
Sea sediment	0,0327 mg/kg wet weight (EUSES)	0,003
Soil	0,73 mg/kg wet weight (EUSES)	0,662

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by soil.

3.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Calendering operations (PROC6) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Tableting, compression, extrusion, pelettisation, granulation (PROC14) / 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>).

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ES 4: Use as an intermediate; Industrial uses (SU3).**4.1. Title section**

Exposure Scenario name	: Use as an intermediate
Structured Short Title	: Use as an intermediate; Industrial uses (SU3).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

CS 1	Use as an intermediate	ERC6a
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15
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4.2. Conditions of use affecting exposure**4.2.1. Control of environmental exposure: Use of intermediate (ERC6a)****Amount used (or contained in articles), frequency and duration of use/exposure**

Maximum allowable site tonnage (MSafe)	: 100.704 kg
Critical compartment for Msafe	: Sewage treatment plant
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 97,2 %

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

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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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / 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 - 10 kPa at 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 intermediate (ERC6a)**

Protection Target	Exposure estimate	RCR

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Air	0,194 mg/m ³ (EUSES)	
Freshwater	0,00142 mg/l (EUSES)	0,118
Freshwater sediment	0,164 mg/kg wet weight (EUSES)	0,062
Sea water	0,000142 mg/l (EUSES)	0,012
Sea sediment	0,0164 mg/kg wet weight (EUSES)	0,001
Soil	0,365 mg/kg wet weight (EUSES)	0,331

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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / 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>).

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ES 5: Use in Oil and Gas field drilling and production operations - Industrial; Industrial uses (SU3).**5.1. 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	: 1-Octene <u>EC-No.:</u> 203-893-7

Environment

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

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b
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5.2. Conditions of use affecting exposure**5.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)****Amount used (or contained in articles), frequency and duration of use/exposure**

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

Discharge to 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.
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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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / 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 - 10 kPa at 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: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)

Additional information on exposure estimation

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

5.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)

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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

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

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ES 6: Use as a fuel - industrial; Industrial uses (SU3).**6.1. Title section**

Exposure Scenario name	: Use as a fuel - industrial
Structured Short Title	: Use as a fuel - industrial; Industrial uses (SU3).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

CS 1	Use as a fuel - industrial	ERC7
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16
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6.2. Conditions of use affecting exposure**6.2.1. Control of environmental exposure: Use of functional fluid at industrial site (ERC7)****Amount used (or contained in articles), frequency and duration of use/exposure**

Maximum allowable site tonnage (MSafe)	: 297.589 kg
Critical compartment for Msafe	: Sewage treatment plant
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 95 %
Water - minimum efficiency of 97,2 %

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

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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 worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Use of fuels (PROC16)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure 0.5 - 10 kPa at 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.

6.3. Exposure estimation and reference to its source**6.3.1. Environmental release and exposure: Use of functional fluid at industrial site (ERC7)**

Protection Target	Exposure estimate	RCR
Air	0,00603 mg/m ³ (EUSES)	

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Freshwater	0,0000501 mg/l (EUSES)	0,004
Freshwater sediment	0,00577 mg/kg wet weight (EUSES)	0,002
Sea water	0,00502 µg/l (EUSES)	0,000
Sea sediment	0,000578 mg/kg wet weight (EUSES)	0,000
Soil	0,0124 mg/kg wet weight (EUSES)	0,011

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by soil.

6.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Use of fuels (PROC16)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

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

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

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

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

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ES 7: Use as a fuel – professional; Professional uses (SU22).**7.1. Title section**

Exposure Scenario name	: Use as a fuel – professional
Structured Short Title	: Use as a fuel – professional; Professional uses (SU22).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

CS 1	Use as a fuel – professional	ERC9a, ERC9b
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC8a, PROC8b, PROC16
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7.2. Conditions of use affecting exposure**7.2.1. Control of environmental exposure: Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)****Amount used (or contained in articles), frequency and duration of use/exposure**

Maximum allowable site tonnage (MSafe)	: 26.157 kg
Critical compartment for Msafe	: Sewage treatment plant
Release type	: Continuous release
Emission days	: 300

Technical and organisational conditions and measures

Risk from environmental exposure is driven by freshwater sediment.

Air - minimum efficiency of 0 %

Water - minimum efficiency of 97,2 %

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

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

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

Other conditions affecting environmental exposure

Receiving surface water flow : 18.000 m³/d

Local freshwater dilution factor : 10

Local marine water dilution factor : 100

7.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Use of fuels (PROC16)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure 0.5 - 10 kPa at 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: Widespread use of functional fluid (indoor) (ERC9a) / Widespread use of functional fluid (outdoor) (ERC9b)

Protection Target	Exposure estimate	RCR

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Air	0,00412 mg/m ³ (EUSES)	
Freshwater	0,0000029 mg/l (EUSES)	0,000
Freshwater sediment	0,000336 mg/kg wet weight (EUSES)	0,000
Sea water	0,0000003 mg/l (EUSES)	0,000
Sea sediment	0,0000341 mg/kg wet weight (EUSES)	0,000
Soil	0,0000399 mg/kg wet weight (EUSES)	0,000

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by freshwater sediment.

7.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Use of fuels (PROC16)

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

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

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

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

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

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ES 8: Lubricants - Industrial; Industrial uses (SU3).**8.1. Title section****Exposure Scenario name** : Lubricants - Industrial**Structured Short Title** : Lubricants - Industrial; Industrial uses (SU3).**Substance** : 1-Octene
EC-No.: 203-893-7**Environment****CS 1** **Lubricants - Industrial** ERC4**Worker****CS 2** **General measures applicable to all activities, General measures (skin irritants)** PROC1,
PROC2,
PROC3,
PROC4,
PROC7,
PROC9,
PROC8a,
PROC8b,
PROC10,
PROC13,
PROC15,
PROC17,
PROC18**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)****Amount used (or contained in articles), frequency and duration of use/exposure**Maximum allowable site tonnage : 801.282 kg
(MSafe)

Critical compartment for Msafe : Sewage treatment plant

Emission days : 20

Technical and organisational conditions and measures

Risk from environmental exposure is driven by marine water.

Air - minimum efficiency of 80 %

Water - minimum efficiency of 97,2 %

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

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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) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Industrial spraying (PROC7) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15) / Lubrication at high energy conditions in metal working operations (PROC17) / General greasing/lubrication at high kinetic energy conditions (PROC18)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure 0.5 - 10 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

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

Other conditions affecting workers exposure

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

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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)**

Protection Target	Exposure estimate	RCR
Air	0,0045 mg/m ³ (EUSES)	
Freshwater	0,0000135 mg/l (EUSES)	0,001
Freshwater sediment	0,00155 mg/kg wet weight (EUSES)	0,000
Sea water	0,0000375 µg/l (EUSES)	0,003
Sea sediment	0,00432 mg/kg wet weight (EUSES)	0,000
Soil	0,00279 mg/kg wet weight (EUSES)	0,003

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by marine water.

8.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Industrial spraying (PROC7) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Use as laboratory reagent (PROC15) / Lubrication at high energy conditions in metal working operations (PROC17) / General greasing/lubrication at high kinetic energy conditions (PROC18)

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>).

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ES 9: Metal working fluids / rolling oils - Industrial; Industrial uses (SU3).**9.1. Title section**

Exposure Scenario name	: Metal working fluids / rolling oils - Industrial
Structured Short Title	: Metal working fluids / rolling oils - Industrial; Industrial uses (SU3).
Substance	: 1-Octene EC-No.: 203-893-7

Environment

CS 1	Metal working fluids / rolling oils - Industrial	ERC4
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Worker

CS 2	General measures applicable to all activities, General measures (skin irritants)	PROC1, PROC2, PROC3, PROC4, PROC5, PROC7, PROC8a, PROC8b, PROC9, PROC10, PROC13, PROC17
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9.2. Conditions of use affecting exposure**9.2.1. Control of environmental exposure: Use of non-reactive processing aid at industrial site (no inclusion into or onto article) (ERC4)****Amount used (or contained in articles), frequency and duration of use/exposure**

Maximum allowable site tonnage (MSafe)	: 801.282 kg
Critical compartment for Msafe	: Sewage treatment plant
Emission days	: 20

Technical and organisational conditions and measures

Risk from environmental exposure is driven by marine water.
Air - minimum efficiency of 80 %
Water - minimum efficiency of 97,2 %

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

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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

9.2.2. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Industrial spraying (PROC7) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Lubrication at high energy conditions in metal working operations (PROC17)

Product (article) characteristics

Covers percentage substance in the product up to 100 %.

Physical form of product : Liquid, vapour pressure 0.5 - 10 kPa at Standard Temperature and Pressure

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

Duration : Covers daily exposures up to 8 hours

Technical and organisational conditions and measures

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

Other conditions affecting workers exposure

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

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9.3. Exposure estimation and reference to its source**9.3.1. 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
Air	0,00488 mg/m ³ (EUSES)	
Freshwater	0,0000135 mg/l (EUSES)	0,001
Freshwater sediment	0,00155 mg/kg wet weight (EUSES)	0,001
Sea water	0,0000375 µg/l (EUSES)	0,003
Sea sediment	0,00432 mg/kg wet weight (EUSES)	0,000
Soil	0,00321 mg/kg wet weight (EUSES)	0,003

Additional information on exposure estimation

Common practices vary across sites thus conservative process release estimates used.
Risk from environmental exposure is driven by marine water.

9.3.2. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1) / Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) / Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) / Chemical production where opportunity for exposure arises (PROC4) / Mixing or blending in batch processes (PROC5) / Industrial spraying (PROC7) / Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a) / Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) / Roller application or brushing (PROC10) / Treatment of articles by dipping and pouring (PROC13) / Lubrication at high energy conditions in metal working operations (PROC17)

Additional information on exposure estimation

A quantitative risk assessment is not required for human health.

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

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

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

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

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

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