

SAFETY DATA SHEET

According to EC No 1907/2006 as amended as at the date of this SDS

NEODENE 6 XHP

| | | | |
|---------|----------------|--------------|--------------------------------|
| Version | Revision Date: | SDS Number: | Date of last issue: 06.03.2023 |
| 2.2 | 01.11.2023 | 800001001077 | Print Date 08.11.2023 |

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

1.1 Product identifier

| | |
|------------------------|-------------------------|
| Trade name | : NEODENE 6 XHP |
| Product code | : V1262, E6225 |
| Registration number EU | : 01-2119475505-34-0000 |
| Synonyms | : SHOP OLEFINS C6-XHP |
| CAS-No. | : 592-41-6 |

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

| | |
|-----------------------------------|---|
| Use of the Sub- stance/Mixture | : Use as an intermediate in industrial chemicals manufacture. Please refer to section 16 and/or the annexes for the registered uses under REACH. |
| Uses advised against | : This product must not be used in applications other than the above without first seeking the advice of the supplier. |

1.3 Details of the supplier of the safety data sheet

| | |
|----------------------------------|---|
| Manufacturer/Supplier | : Shell Chemicals Europe B.V. PO Box 2334 3000 CH Rotterdam Netherlands |
| Telephone | : +31 (0)10 441 5137 / +31 (0)10 441 5191 |
| Telefax | : +31 (0)20 716 8316 / +31 (0)20 713 9230 |
| Contact for Safety Data Sheet | : sccmsds@shell.com |

1.4 Emergency telephone number

+44 (0) 1235 239 670 (This telephone number is available 24 hours per day, 7 days per week)
Vergiftungsinformationszentrale: +43 1 406 43 43

| | |
|-------------------|--|
| Other information | : NEODENE is a trademark owned by Shell Trademark Management B.V. and Shell Brands Inc. and used by affiliates of Shell plc. |
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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

| | |
|-------------------------------|---|
| Flammable liquids, Category 2 | H225: Highly flammable liquid and vapour. |
| Aspiration hazard, Category 1 | H304: May be fatal if swallowed and enters airways. |

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements :
H225 PHYSICAL HAZARDS:
Highly flammable liquid and vapour.
H304 HEALTH HAZARDS:
May be fatal if swallowed and enters airways.
ENVIRONMENTAL HAZARDS:
Not classified as environmental hazard according to CLP criteria.

Supplemental Hazard Statements : EUH066 Repeated exposure may cause skin dryness or cracking.

Precautionary statements : **Prevention:**
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.

Storage:

No precautionary phrases.

Disposal:

No precautionary phrases.

2.3 Other hazards

Ecological information: 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.

Toxicological information: 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.

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In use, may form flammable/explosive vapour-air mixture.
Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.
This material is a static accumulator.
Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.
If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur.
Will float and can be reignited on surface water.

SECTION 3: Composition/information on ingredients

3.1 Substances

Components

| Chemical name | CAS-No. EC-No. | Concentration (% w/w) |
|---------------|-----------------------|-----------------------|
| hex-1-ene | 592-41-6 209-753-1 | 100 |

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Not expected to be a health hazard when used under normal conditions.
- Protection of first-aiders : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings.
- If inhaled : No treatment necessary under normal conditions of use.
If symptoms persist, obtain medical advice.
- In case of skin contact : Remove contaminated clothing. Immediately flush skin with large amounts of water for at least 15 minutes, and follow by washing with soap and water if available. If redness, swelling, pain and/or blisters occur, transport to the nearest medical facility for additional treatment.
- In case of eye contact : Flush eye with copious quantities of water.
Remove contact lenses, if present and easy to do. Continue rinsing.
If persistent irritation occurs, obtain medical attention.
- If swallowed : Call emergency number for your location / facility.
If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment. If vomiting occurs

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spontaneously, keep head below hips to prevent aspiration.
If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : Not considered to be an inhalation hazard under normal conditions of use.
Possible respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.
Skin irritation signs and symptoms may include a burning sensation, redness, or swelling.
No specific hazards under normal use conditions.
Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision.
If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.
The onset of respiratory symptoms may be delayed for several hours after exposure.
If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.
Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Call a doctor or poison control center for guidance.
Potential for chemical pneumonitis.
Narcotic at high vapour concentrations.
Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : Do not use water in a jet.

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Clear fire area of all non-emergency personnel.
Hazardous combustion products may include:
A complex mixture of airborne solid and liquid particulates and gases (smoke).
Carbon monoxide.

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Unidentified organic and inorganic compounds.
Flammable vapours may be present even at temperatures below the flash point.
The vapour is heavier than air, spreads along the ground and distant ignition is possible.
Will float and can be reignited on surface water.

5.3 Advice for firefighters

Special protective equipment for firefighters : Proper protective equipment including chemical resistant gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to relevant Standards (e.g. Europe: EN469).

Specific extinguishing methods : Standard procedure for chemical fires.

Further information : Keep adjacent containers cool by spraying with water.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Observe all relevant local and international regulations. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained.

6.1.1 For non emergency personnel:
Avoid contact with skin, eyes and clothing.
Isolate hazard area and deny entry to unnecessary or unprotected personnel.
Do not breathe fumes, vapour.
Do not operate electrical equipment.

6.1.2 For emergency responders:
Avoid contact with skin, eyes and clothing.
Isolate hazard area and deny entry to unnecessary or unprotected personnel.
Do not breathe fumes, vapour.
Do not operate electrical equipment.

6.2 Environmental precautions

Environmental precautions : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures

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against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.
Monitor area with combustible gas indicator.

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : For small liquid spills (< 1 drum), transfer by mechanical means to a labeled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- Ventilate contaminated area thoroughly.
If contamination of site occurs remediation may require specialist advice.

6.4 Reference to other sections

For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.,
For guidance on disposal of spilled material see Section 13 of this Safety Data Sheet.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Technical measures : Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Section 8 of this Safety Data Sheet.
- Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
- Ensure that all local regulations regarding handling and storage facilities are followed.
- Advice on safe handling : Avoid inhaling vapour and/or mists.
- Avoid contact with skin, eyes and clothing.
- Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks.
- Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
- Bulk storage tanks should be diked (bunded).
- When using do not eat or drink.
- The vapour is heavier than air, spreads along the ground and distant ignition is possible.

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Product Transfer : Even with proper grounding and bonding, this material can still accumulate an electrostatic charge. If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable air-vapour mixtures can occur. Be aware of handling operations that may give rise to additional hazards that result from the accumulation of static charges. These include but are not limited to pumping (especially turbulent flow), mixing, filtering, splash filling, cleaning and filling of tanks and containers, sampling, switch loading, gauging, vacuum truck operations, and mechanical movements. These activities may lead to static discharge e.g. spark formation. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/s until fill pipe submerged to twice its diameter, then ≤ 7 m/s). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

Refer to guidance under Handling section.

Hygiene measures : Wash hands before eating, drinking, smoking and using the toilet. Launder contaminated clothing before re-use. Do not ingest. If swallowed, then seek immediate medical assistance.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Refer to section 15 for any additional specific legislation covering the packaging and storage of this product.

Storage class (TRGS 510) : 3, Flammable liquids

This is a regulation from Germany which does not constitute a legal basis in Austria.

Further information on storage stability : Storage Temperature:
Ambient.

Bulk storage tanks should be diked (bunded).
Locate tanks away from heat and other sources of ignition.
Cleaning, inspection and maintenance of storage tanks is a specialist operation, which requires the implementation of strict procedures and precautions.
Must be stored in a diked (bunded) well-ventilated area, away from sunlight, ignition sources and other sources of heat.
Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment.
Electrostatic charges will be generated during pumping.
Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to reduce the risk.
The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flammable.

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- Packaging material : Suitable material: For containers, or container linings use mild steel, stainless steel., For container paints, use epoxy paint, zinc silicate paint.
Unsuitable material: Avoid prolonged contact with natural, butyl or nitrile rubbers.
- Container Advice : Do not cut, drill, grind, weld or perform similar operations on or near containers.

7.3 Specific end use(s)

- Specific use(s) : Please refer to section 16 and/or the annexes for the registered uses under REACH.

See additional references that provide safe handling practices for liquids that are determined to be static accumulators: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices on Static Electricity).
IEC/TS 60079-32-1: Electrostatic hazards, guidance

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Biological occupational exposure limits

No biological limit allocated.

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

| Substance name | Environmental Compartment | Value |
|----------------|---------------------------|-------------------------------|
| hex-1-ene | Fresh water | 0,111 mg/l |
| hex-1-ene | Fresh water sediment | 19,25 mg/kg dry weight (d.w.) |
| hex-1-ene | Soil | 4,01 mg/kg dry weight (d.w.) |
| hex-1-ene | Sewage treatment plant | |
| Remarks: | Data not available | |

8.2 Exposure controls

Engineering measures

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.
Use sealed systems as far as possible.
Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits.
Local exhaust ventilation is recommended.
Eye washes and showers for emergency use.
Firewater monitors and deluge systems are recommended.

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Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated.

The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include:

General Information:

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or for subsequent recycle.

Personal protective equipment

Read in conjunction with the Exposure Scenario for your specific use contained in the Annex. The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards.

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

Eye protection : Wear goggles for use against liquids and gas.
Approved to EU Standard EN166.

Hand protection

Remarks : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection. Longer term protection: Nitrile rubber gloves. Incidental contact/Splash protection: PVC or neoprene rubber gloves. For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be re-

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placed. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended.

Skin and body protection : Skin protection is not required under normal conditions of use.
For prolonged or repeated exposures use impervious clothing over parts of the body subject to exposure.

If repeated and/or prolonged skin exposure to the substance is likely, then wear suitable gloves tested to relevant Standard, and provide employee skin care programmes.
Protective clothing approved to EU Standard EN14605.

Wear antistatic and flame-retardant clothing, if a local risk assessment deems it so.

Respiratory protection : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.
Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.
If air-filtering respirators are suitable for conditions of use: Select a filter suitable for organic gases and vapours [Type AX boiling point < 65°C (149°F)] meeting EN14387.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

| | |
|-----------------------------|-------------------------------|
| Physical state | : Liquid at room temperature. |
| Colour | : Data not available |
| Odour | : Mild hydrocarbon |
| Odour Threshold | : Data not available |
| Melting / freezing point | : -140 °C |
| Boiling point/boiling range | : 61 - 78 °C |
| Flammability | |
| Flammability (solid, gas) | : Not applicable |

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Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit /
upper flammability limit : 6,9 %(V)

Lower explosion limit /
Lower flammability limit : 1,2 %(V)

Flash point : -29 °C

Auto-ignition temperature : 285 °C

Decomposition temperature
Decomposition temperature : Not applicable

pH : Data not available

Viscosity
Viscosity, dynamic : 0,23 mPa.s
Method: ASTM D445

Viscosity, kinematic : 0,252 mm²/s (25 °C)
Method: ASTM D445

0,4 mm²/s (20 °C)
Method: ASTM D445

Solubility(ies)
Water solubility : 47 mg/l (20 °C)

Partition coefficient: n-
octanol/water : log Pow: 3,9

Vapour pressure : 0,414 bar (37,8 °C)

Relative density : 0,6789 (15 °C)
Method: ASTM D4052

Density : 677 kg/m³ (20 °C)
Method: ASTM D4052

Relative vapour density : Data not available

Particle characteristics
Particle size : Data not available

9.2 Other information

Explosives : no data available

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Oxidizing properties : Data not available

Evaporation rate : Data not available

Conductivity : Low conductivity: < 100 pS/m

The conductivity of this material makes it a static accumulator. A liquid is typically considered nonconductive if its conductivity is below 100 pS/m and is considered semi-conductive if its conductivity is below 10,000 pS/m. Whether a liquid is nonconductive or semiconductive, the precautions are the same. A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid

Surface tension : Data not available

Molecular weight : 84 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.

10.2 Chemical stability

No hazardous reaction is expected when handled and stored according to provisions
Stable under normal conditions of use.

10.3 Possibility of hazardous reactions

Hazardous reactions : Reacts with strong oxidising agents.

10.4 Conditions to avoid

Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.

In certain circumstances product can ignite due to static electricity.

10.5 Incompatible materials

Materials to avoid : Strong oxidising agents.

10.6 Hazardous decomposition products

Hazardous decomposition products are not expected to form during normal storage.
Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

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SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Information on likely routes of exposure : Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Acute toxicity

Components:

hex-1-ene:

Acute oral toxicity : LD50 (Rat, male and female): > 5.000 mg/kg
Method: Test(s) equivalent or similar to OECD Test Guideline 401
Remarks: Based on available data, the classification criteria are not met.

Acute inhalation toxicity : LC50 (Rat, male and female): > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Test(s) equivalent or similar to OECD Test Guideline 403
Remarks: Based on available data, the classification criteria are not met.

Acute dermal toxicity : LD50 (Rabbit, male and female): > 2.000 mg/kg
Method: Test(s) equivalent or similar to OECD Test Guideline 402
Remarks: Based on available data, the classification criteria are not met.

Skin corrosion/irritation

Components:

hex-1-ene:

Species : Rabbit
Method : Test(s) equivalent or similar to OECD Test Guideline 404
Remarks : Based on available data, the classification criteria are not met.
Repeated exposure may cause skin dryness or cracking.

Serious eye damage/eye irritation

Components:

hex-1-ene:

Species : Rabbit
Method : Test(s) equivalent or similar to OECD Test Guideline 405

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Remarks : Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation

Components:

hex-1-ene:

Species : Guinea pig
Method : Test(s) equivalent or similar to OECD Test Guideline 406
Remarks : Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Components:

hex-1-ene:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Remarks: Based on available data, the classification criteria are not met.

Method: Test(s) equivalent or similar to OECD Test Guideline 473
Remarks: Based on available data, the classification criteria are not met.

Genotoxicity in vivo : Species: Mouse
Method: OECD Test Guideline 474
Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity- Assessment : This product does not meet the criteria for classification in categories 1A/1B.

Carcinogenicity

Components:

hex-1-ene:

Carcinogenicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

| Material | GHS/CLP Carcinogenicity Classification |
|-----------|--|
| hex-1-ene | No carcinogenicity classification. |

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Reproductive toxicity

Components:

hex-1-ene:

Effects on fertility : Species: Rat
Sex: male and female
Application Route: Oral

Method: OECD Test Guideline 422
Remarks: Based on available data, the classification criteria are not met.

Reproductive toxicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

STOT - single exposure

Components:

hex-1-ene:

Remarks : Based on available data, the classification criteria are not met.

STOT - repeated exposure

Components:

hex-1-ene:

Remarks : Based on available data, the classification criteria are not met.

Repeated dose toxicity

Components:

hex-1-ene:

| | |
|-------------------|--|
| Species | : Rat, male and female |
| Application Route | : Oral |
| Method | : OECD Test Guideline 408 |
| Target Organs | : No specific target organs noted |
| Species | : Rat, male and female |
| Application Route | : Inhalation |
| Method | : Test(s) equivalent or similar to OECD Test Guideline 413 |
| Target Organs | : No specific target organs noted |

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|----------------|------------------------------|-----------------------------|---|

Aspiration toxicity

Components:

hex-1-ene:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal., Not considered an aspiration hazard.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : 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.

Further information

Product:

Remarks : Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

Components:

hex-1-ene:

Remarks : Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12: Ecological information

12.1 Toxicity

Components:

hex-1-ene:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 5,6 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203
Remarks: Toxic
LL/EL/IL50 > 1 <= 10 mg/l

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 4,4 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202
Remarks: Toxic
LL/EL/IL50 > 1 <= 10 mg/l

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Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (algae)): > 5,5 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 201
Remarks: Toxic
LL/EL/IL50 > 1 <= 10 mg/l

Toxicity to microorganisms : EC50 (Natural microorganism):
Exposure time: 16 h
Method: Other guideline method.
Remarks: No toxicity at the limit of solubility
Practically non toxic:
LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic toxicity) : Remarks: Data not available

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : Remarks: Data not available

12.2 Persistence and degradability

Components:

hex-1-ene:

Biodegradability : Biodegradation: 67 - 98 %
Exposure time: 28 d
Method: OECD Test Guideline 301C
Remarks: Readily biodegradable.

12.3 Bioaccumulative potential

Components:

hex-1-ene:

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

12.4 Mobility in soil

Components:

hex-1-ene:

Mobility : Remarks: Floats on water., If it enters soil, it will adsorb to soil particles and will not be mobile.

12.5 Results of PBT and vPvB assessment

Components:

hex-1-ene:

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Assessment : The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB..

12.6 Endocrine disrupting properties

Product:

Assessment : 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

Product:

Additional ecological information : Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Recover or recycle if possible.
It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment.
Do not dispose into the environment, in drains or in water courses.
Do not dispose of tank water bottoms by allowing them to drain into the ground. This will result in soil and groundwater contamination.
Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Waste, spills or used product is dangerous waste.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.
Local regulations may be more stringent than regional or national requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical aspects at controlling pollutions from ships.

Contaminated packaging : Drain container thoroughly.

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After draining, vent in a safe place away from sparks and fire.
Residues may cause an explosion hazard. Do not puncture,
cut or weld uncleaned drums.
Send to drum recoverer or metal reclaimer.
Comply with any local recovery or waste disposal regulations.

SECTION 14: Transport information

14.1 UN number or ID number

| | |
|------|--------|
| ADN | : 2370 |
| ADR | : 2370 |
| RID | : 2370 |
| IMDG | : 2370 |
| IATA | : 2370 |

14.2 UN proper shipping name

| | |
|------|------------|
| ADN | : 1-HEXENE |
| ADR | : 1-HEXENE |
| RID | : 1-HEXENE |
| IMDG | : 1-HEXENE |
| IATA | : 1-HEXENE |

14.3 Transport hazard class(es)

| | |
|------|-----|
| ADN | : 3 |
| ADR | : 3 |
| RID | : 3 |
| IMDG | : 3 |
| IATA | : 3 |

14.4 Packing group

| | |
|------------------------------|----------|
| ADN | |
| Packing group | : II |
| Classification Code | : F1 |
| Labels | : 3 (N3) |
| ADR | |
| Packing group | : II |
| Classification Code | : F1 |
| Hazard Identification Number | : 33 |
| Labels | : 3 |
| RID | |
| Packing group | : II |
| Classification Code | : F1 |
| Hazard Identification Number | : 33 |
| Labels | : 3 |

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IMDG

Packing group : II
Labels : 3

IATA

Packing group : II
Labels : 3

14.5 Environmental hazards

ADN

Environmentally hazardous : yes

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

14.7 Maritime transport in bulk according to IMO instruments

Pollution category : Y
Ship type : 3
Product name : Hexene (all isomers)

Additional Information : This product may be transported under nitrogen blanketing. Nitrogen is an odourless and invisible gas. Exposure to nitrogen may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

Transport in bulk according to Annex II of Marpol and the IBC Code

SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV) : Product is not subject to Authorisation under REACH.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

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Other regulations:

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Take note the of Children and Youth Employment Law (KJBG).

Take note of Law on the protection of mothers at work (Maternity Protection Act – MSchG)

Product is subject to Gewerbeordnung (GewO) covering among others the requirements of the Seveso III directive (2012/18/EU).

The components of this product are reported in the following inventories:

| | |
|-------|----------|
| AIIC | : Listed |
| DSL | : Listed |
| IECSC | : Listed |
| ENCS | : Listed |
| KECI | : Listed |
| NZIoC | : Listed |
| PICCS | : Listed |
| TSCA | : Listed |
| TCSI | : Listed |

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration as-

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sociated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

Training advice : Provide adequate information, instruction and training for operators.

Other information : For Industry guidance and tools on REACH please visit the CEFIC website at <http://cefic.org/Industry-support>.
The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

A vertical bar (|) in the left margin indicates an amendment from the previous version.

This product is classified as H304 (May be fatal if swallowed and enters airways). The risk relates to potential for aspiration. The risk arising from aspiration hazard is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific hazard and included within Section 8 of the SDS. An exposure scenario is not presented.

This product is classified as R66 / EUH066 (Repeated exposure may cause skin dryness or cracking). The risk relates to the potential for repeated or prolonged dermal contact. The risk arising from contact is solely related to the physico-chemical properties of the substance. The risk can therefore be controlled by implementing risk management measures tailored to this specific hazard and included within Section 8 of the SDS. An exposure scenario is not presented.

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Sources of key data used to compile the Safety Data Sheet : The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU IUCLID data base, EC 1272 regulation, etc).

Classification of the mixture:

| | |
|--------------|------|
| Flam. Liq. 2 | H225 |
| Asp. Tox. 1 | H304 |

Classification procedure:

On basis of test data.
Expert judgement and weight of evidence determination.

Identified Uses according to the Use Descriptor System

Uses - Worker

Title : Manufacture of substance- Industrial

Uses - Worker

Title : Use as an intermediate- Industrial

Uses - Worker

Title : Distribution of substance- Industrial

Uses - Worker

Title : Polymer production- Industrial

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.

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Exposure Scenario - Worker

300000000380

| SECTION 1 | EXPOSURE SCENARIO TITLE |
|------------------|---|
| Title | Manufacture of substance- Industrial |
| Use Descriptor | Sector of Use: SU3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC1, ERC4, ESVOC SpERC 1.1.v1 |
| Scope of process | Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities. |

| SECTION 2 | OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES |
|------------------------|---|
| Additional Information | No exposure assessment presented for human health. |

| Section 2.1 | Control of Worker Exposure |
|-------------------------|----------------------------|
| Product Characteristics | |

| Contributing Scenarios | Risk Management Measures |
|------------------------|--------------------------|
|------------------------|--------------------------|

| Section 2.2 | Control of Environmental Exposure |
|---|-----------------------------------|
| Substance is a unique structure. | |
| Predominantly hydrophobic. | |
| Readily biodegradable. | |
| Amounts Used | |
| Fraction of EU tonnage used in region: | 0,5 |
| Regional use tonnage (tonnes/year): | 5,0E+04 |
| Fraction of Regional tonnage used locally: | 1 |
| Annual site tonnage (tonnes/year): | 5,0E+04 |
| Maximum daily site tonnage (kg/day): | 1,667E+05 |
| Frequency and Duration of Use | |
| Continuous release. | |
| Emission Days (days/year): | 300 |
| Environmental factors not influenced by risk management | |
| Local freshwater dilution factor: | 40 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | |
| Release fraction to air from process (initial release prior to RMM): | 5,0E-02 |
| Release fraction to wastewater from process (initial release prior to RMM): | 3,0E-04 |
| Release fraction to soil from process (initial release prior to RMM): | 1,0E-04 |

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| | |
|--|-----------|
| Technical conditions and measures at process level (source) to prevent release | |
| Common practices vary across sites thus conservative process re-lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emis-sions and releases to soil | |
| Risk from environmental exposure is driven by soil. | |
| Prevent discharge of undissolved substance to or recover from onsite wastewater. | |
| If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. | |
| Treat air emission to provide a typical removal efficiency of (%) | 90,0 |
| Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) | 96,8 |
| If discharging to domestic sewage treatment plant, provide the re-quired onsite wastewater removal efficiency of (%) | 0 |
| Organisational measures to prevent/limit release from site | |
| Do not apply industrial sludge to natural soils. | |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment plant | |
| Estimated substance removal from wastewater via domestic sewage treatment (%) | 96,8 |
| Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) | 96,8 |
| Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) | 1,668E+05 |
| Assumed domestic sewage treatment plant flow (m3/d) | 2.000 |
| Conditions and Measures related to external treatment of waste for disposal | |
| During manufacturing no waste of the substance is generated. | |
| Conditions and measures related to external recovery of waste | |
| During manufacturing no waste of the substance is generated. | |

| | |
|--|----------------------------|
| SECTION 3 | EXPOSURE ESTIMATION |
| Section 3.1 - Health | |
| No exposure assessment presented for human health. | |

| | |
|---------------------------------|--|
| Section 3.2 -Environment | |
| Used EUSES model. | |

| | |
|--|--|
| SECTION 4 | GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO |
| Section 4.1 - Health | |
| No exposure assessment presented for human health. | |

| | |
|---------------------------------|--|
| Section 4.2 -Environment | |
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|--|
| 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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Exposure Scenario - Worker

| | |
|-------------------------|--|
| 300000000382 | |
| SECTION 1 | EXPOSURE SCENARIO TITLE |
| Title | Use as an intermediate- Industrial |
| Use Descriptor | Sector of Use: SU3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC15 Environmental Release Categories: ERC6a, ESVOC SpERC 6.1a.v1 |
| Scope of process | Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container). |

| | |
|-------------------------------|--|
| SECTION 2 | OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES |
| Additional Information | No exposure assessment presented for human health. |

| | |
|--------------------------------|-----------------------------------|
| Section 2.1 | Control of Worker Exposure |
| Product Characteristics | |

| | |
|-------------------------------|---------------------------------|
| Contributing Scenarios | Risk Management Measures |
|-------------------------------|---------------------------------|

| | |
|---|--|
| Section 2.2 | Control of Environmental Exposure |
| Substance is a unique structure. | |
| Predominantly hydrophobic. | |
| Readily biodegradable. | |
| Amounts Used | |
| Fraction of EU tonnage used in region: | 0,1 |
| Regional use tonnage (tonnes/year): | 5.000 |
| Fraction of Regional tonnage used locally: | 1 |
| Annual site tonnage (tonnes/year): | 5.000 |
| Maximum daily site tonnage (kg/day): | 1,667E+04 |
| Frequency and Duration of Use | |
| Continuous release. | |
| Emission Days (days/year): | 300 |
| Environmental factors not influenced by risk management | |
| Local freshwater dilution factor: | 10 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | |
| Release fraction to air from process (initial release prior to RMM): | 2,5E-02 |
| Release fraction to wastewater from process (initial release prior to RMM): | 3,0E-04 |
| Release fraction to soil from process (initial release prior to RMM): | 1,0E-03 |

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| | |
|--|-----------|
| Technical conditions and measures at process level (source) to prevent release | |
| Common practices vary across sites thus conservative process re-lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emis-sions and releases to soil | |
| Risk from environmental exposure is driven by soil. | |
| Prevent discharge of undissolved substance to or recover from onsite wastewater. | |
| If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. | |
| Treat air emission to provide a typical removal efficiency of (%) | 80,0 |
| Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) | 96,8 |
| If discharging to domestic sewage treatment plant, provide the re-quired onsite wastewater removal efficiency of (%) | 0 |
| Organisational measures to prevent/limit release from site | |
| Do not apply industrial sludge to natural soils. | |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment plant | |
| Estimated substance removal from wastewater via domestic sewage treatment (%) | 96,8 |
| Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) | 96,8 |
| Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) | 1,668E+05 |
| Assumed domestic sewage treatment plant flow (m3/d) | 2.000 |
| Conditions and Measures related to external treatment of waste for disposal | |
| External treatment and disposal of waste should comply with applicable local and/or regional regulations. | |
| Conditions and measures related to external recovery of waste | |
| External recovery and recycling of waste should comply with applicable local and/or regional regulations. | |

| | |
|--|----------------------------|
| SECTION 3 | EXPOSURE ESTIMATION |
| Section 3.1 - Health | |
| No exposure assessment presented for human health. | |

| | |
|---------------------------------|--|
| Section 3.2 -Environment | |
| Used EUSES model. | |

| | |
|--|--|
| SECTION 4 | GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO |
| Section 4.1 - Health | |
| No exposure assessment presented for human health. | |

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| Section 4.2 -Environment |
| 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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Exposure Scenario - Worker

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|-------------------------|---|
| 300000000381 | |
| SECTION 1 | EXPOSURE SCENARIO TITLE |
| Title | Distribution of substance- Industrial |
| Use Descriptor | Sector of Use: SU3, SU8, SU9 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC8a, PROC8b, PROC9, PROC15 Environmental Release Categories: ERC1, ERC2, ERC3, ERC4, ERC5, ERC6a, ERC6b, ERC7, ERC6c, ERC6d, ESVOC SpERC 1.1b.v1 |
| Scope of process | Loading (including marine vessel/barge, rail/road car and IBC loading) and repacking (including drums and small packs) of substance, including its sampling, storage, unloading distribution and associated laboratory activities. |

| | |
|-------------------------------|--|
| SECTION 2 | OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES |
| Additional Information | No exposure assessment presented for human health. |

| | |
|--------------------------------|-----------------------------------|
| Section 2.1 | Control of Worker Exposure |
| Product Characteristics | |

| | |
|-------------------------------|---------------------------------|
| Contributing Scenarios | Risk Management Measures |
|-------------------------------|---------------------------------|

| | |
|---|--|
| Section 2.2 | Control of Environmental Exposure |
| Substance is a unique structure. | |
| Predominantly hydrophobic. | |
| Readily biodegradable. | |
| Amounts Used | |
| Fraction of EU tonnage used in region: | 0,1 |
| Regional use tonnage (tonnes/year): | 3,0E+04 |
| Fraction of Regional tonnage used locally: | 1 |
| Annual site tonnage (tonnes/year): | 3,0E+04 |
| Maximum daily site tonnage (kg/day): | 8,219E+04 |
| Frequency and Duration of Use | |
| Continuous release. | |
| Emission Days (days/year): | 365 |
| Environmental factors not influenced by risk management | |
| Local freshwater dilution factor: | 10 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | |
| Release fraction to air from process (initial release prior to RMM): | 1,0E-03 |
| Release fraction to wastewater from process (initial release prior to RMM): | 1,0E-05 |
| Release fraction to soil from process (initial release prior to RMM): | 1,0E-05 |

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| | |
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| Technical conditions and measures at process level (source) to prevent release | |
| Common practices vary across sites thus conservative process re-lease estimates used. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emis-sions and releases to soil | |
| Risk from environmental exposure is driven by soil. | |
| Prevent discharge of undissolved substance to or recover from onsite wastewater. | |
| If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. | |
| Treat air emission to provide a typical removal efficiency of (%) | 90,0 |
| Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%) | 96,8 |
| If discharging to domestic sewage treatment plant, provide the re-quired onsite wastewater removal efficiency of (%) | 0 |
| Organisational measures to prevent/limit release from site | |
| Do not apply industrial sludge to natural soils. | |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment plant | |
| Estimated substance removal from wastewater via domestic sewage treatment (%) | 96,8 |
| Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) | 96,8 |
| Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) | 5,012E+06 |
| Assumed domestic sewage treatment plant flow (m3/d) | 2.000 |
| Conditions and Measures related to external treatment of waste for disposal | |
| External treatment and disposal of waste should comply with applicable local and/or regional regulations. | |
| Conditions and measures related to external recovery of waste | |
| External recovery and recycling of waste should comply with applicable local and/or regional regulations. | |

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| SECTION 3 | EXPOSURE ESTIMATION |
| Section 3.1 - Health | |
| No exposure assessment presented for human health. | |

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| Section 3.2 -Environment | |
| Used EUSES model. | |

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| SECTION 4 | GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO |
| Section 4.1 - Health | |
| No exposure assessment presented for human health. | |

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Section 4.2 -Environment

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>).

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Exposure Scenario - Worker

| | |
|-------------------------|---|
| 300000000383 | |
| SECTION 1 | EXPOSURE SCENARIO TITLE |
| Title | Polymer production- Industrial |
| Use Descriptor | Sector of Use: SU3, SU10 Process Categories: PROC1, PROC2, PROC3, PROC4, PROC5, PROC6, PROC8a, PROC8b, PROC14, PROC15 Environmental Release Categories: ERC 6C, ESVOC SpERC 4.20.v1 |
| Scope of process | Manufacture of polymers from monomers in continuous and batch processes. Including production, re-cycling and recovery, degassing, discharging, reactor maintenance and immediate polymer product formation (i.e. compounding, pelletisation, product off-gassing). |

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| SECTION 2 | OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES |
| Additional Information | No exposure assessment presented for human health. |

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| Section 2.1 | Control of Worker Exposure |
| Product Characteristics | |

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| Contributing Scenarios | Risk Management Measures |
|-------------------------------|---------------------------------|

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| Section 2.2 | Control of Environmental Exposure |
| Substance is a unique structure. | |
| Predominantly hydrophobic. | |
| Readily biodegradable. | |
| Amounts Used | |
| Fraction of EU tonnage used in region: | 0,1 |
| Regional use tonnage (tonnes/year): | 2,5E+04 |
| Fraction of Regional tonnage used locally: | 1 |
| Annual site tonnage (tonnes/year): | 2,5E+04 |
| Maximum daily site tonnage (kg/day): | 8,333E+04 |
| Frequency and Duration of Use | |
| Continuous release. | |
| Emission Days (days/year): | 300 |
| Environmental factors not influenced by risk management | |
| Local freshwater dilution factor: | 10 |
| Local marine water dilution factor: | 100 |
| Other Operational Conditions affecting Environmental Exposure | |
| Release fraction to air from process (initial release prior to RMM): | 1,0E-02 |
| Release fraction to wastewater from process (initial release prior to RMM): | 3,0E-04 |
| Release fraction to soil from process (initial release prior to RMM): | 1,0E-04 |

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| Technical conditions and measures at process level (source) to prevent release | |
| Common practices vary across sites thus conservative process release estimates used. | |
| Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil | |
| Risk from environmental exposure is driven by soil. | |
| Prevent discharge of undissolved substance to or recover from onsite wastewater. | |
| If discharging to domestic sewage treatment plant, no onsite wastewater treatment required. | |
| Treat air emission to provide a typical removal efficiency of (%) | 80,0 |
| Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of \geq (%) | 96,8 |
| If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%) | 0 |
| Organisational measures to prevent/limit release from site | |
| Do not apply industrial sludge to natural soils. | |
| Sludge should be incinerated, contained or reclaimed. | |
| Conditions and Measures related to municipal sewage treatment plant | |
| Estimated substance removal from wastewater via domestic sewage treatment (%) | 96,8 |
| Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%) | 96,8 |
| Maximum allowable site tonnage (MSafe) based on release following total wastewater treatment removal (kg/d) | 1,715E+05 |
| Assumed domestic sewage treatment plant flow (m3/d) | 2.000 |
| Conditions and Measures related to external treatment of waste for disposal | |
| External treatment and disposal of waste should comply with applicable local and/or regional regulations. | |
| Conditions and measures related to external recovery of waste | |
| External recovery and recycling of waste should comply with applicable local and/or regional regulations. | |

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|--|----------------------------|
| SECTION 3 | EXPOSURE ESTIMATION |
| Section 3.1 - Health | |
| No exposure assessment presented for human health. | |

| | |
|---------------------------------|--|
| Section 3.2 -Environment | |
| Used EUSES model. | |

| | |
|--|--|
| SECTION 4 | GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO |
| Section 4.1 - Health | |
| No exposure assessment presented for human health. | |

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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>).