According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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SECTION 1. IDENTIFICATION

Product name : NEODENE 10/12 1:4

Product code : V1493, V1526

Manufacturer or supplier's details

Company : Shell Chemical LP

PO Box 576

HOUSTON TX 77001

USA

SDS Request : 1-800-240-6737

Customer Service : 1-855-697-4355

Emergency telephone number

Chemtrec Domestic (24 hr) : 1-800-424-9300

Chemtrec International (24

hr)

: 1-703-527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Chemical intermediate.

Restrictions on use : This product must not be used in applications other than the

above without first seeking the advice of the supplier.

Other information : NEODENE is a registered trademark of Shell trademark Man-

agement BV.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 4

Aspiration hazard : Category 1

Long-term (chronic) aquatic

hazard

: Category 2

GHS label elements

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Hazard pictograms





Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:

H227 Combustible liquid. HEALTH HAZARDS:

H304 May be fatal if swallowed and enters airways.

ENVIRONMENTAL HAZARDS:

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements : Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.

No smoking.

P243 Take precautionary measures against static discharge.

P273 Avoid release to the environment.

P280 Wear protective gloves/ protective clothing/ eye protection/

face protection.

Response:

P370 + P378 In case of fire: Use appropriate media to extin-

quish.

P301 + P310 IF SWALLOWED: Immediately call a POISON

CENTER or doctor/ physician. P331 Do NOT induce vomiting.

P391 Collect spillage.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

P405 Store locked up.

Disposal:

P501 Dispose of contents/ container to an approved waste dis-

posal plant.

Other hazards which do not result in classification

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 airvapour mixtures can occur.

Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Will float and can be reignited on surface water.

Repeated exposure may cause skin dryness or cracking.

The classification of this material is based on OSHA HCS 2012 criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

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Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (% w/w)
dodec-1-ene	dodec-1-ene	112-41-4	>= 80 - <= 95
dec-1-ene	dec-1-ene	872-05-9	>= 5 - <= 20

SECTION 4. FIRST-AID MEASURES

General advice Not expected to be a health hazard when used under normal

conditions.

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

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 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.

Most important symptoms and effects, both acute and

delayed

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, cough-

ing, and/or difficulty breathing.

Skin irritation signs and symptoms may include a burning sen-

sation, redness, or swelling.

No specific hazards under normal use conditions.

Eye irritation signs and symptoms may include a burning sen-

sation, 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.

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 burn-

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ing sensation and/or a dried/cracked appearance.

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.

Indication of any immediate

medical attention and special treatment needed

Call a doctor or poison control center for guidance. Potential for chemical pneumonitis.

Treat symptomatically.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Foam, water spray or fog. Dry chemical powder, carbon diox-

ide, sand or earth may be used for small fires only.

Unsuitable extinguishing

media

Do not use water in a jet.

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.

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.

Specific extinguishing meth-

ods

Standard procedure for chemical fires.

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

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).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

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.

Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

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Do not breathe fumes, vapour. Do not operate electrical equipment.

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 against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment.

Monitor area with combustible gas indicator.

Methods and materials for containment and 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 spe-

cialist advice.

Additional advice

: 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.

U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Section 15) to the National Response Center at (800) 424-8802.

Under Section 311 of the Clean Water Act (CWA) this material is considered an oil. As such, spills into surface waters must be reported to the National Response Center at (800) 424-8802

This material is covered by EPA's Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Petroleum Exclusion. Therefore, releases to the environment may not be reportable under CERCLA.

SECTION 7. HANDLING AND STORAGE

Technical measures : Avoid breathing of or direct contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For

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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.

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Ensure that all local regulations regarding handling and stor-

age 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.

Avoidance of contact : Strong oxidising agents.

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.

Conditions for safe storage : Refer to section 15 for any additional specific legislation cov-

ering the packaging and storage of this product.

Further information on stor-

age 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, cor-

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rosives 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 flamma-

ble.

Suitable material: For containers, or container linings use mild Packaging material

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.

Specific use(s) : Not applicable

> 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 AND PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Biological occupational exposure limits

No biological limit allocated.

Monitoring Methods

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substanc-

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es http://www.hse.gov.uk/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany http://www.dguv.de/inhalt/index.jsp

L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

Engineering measures

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:

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.

Firewater monitors and deluge systems are recommended.

Eye washes and showers for emergency use.

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

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 subsequent recycle.

Personal protective equipment

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 A boiling point >65°C (149°F)].

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Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1910.134.

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, neoprene or nitrile 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 replaced. 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.

Eye protection : If material is handled such that it could be splashed into eyes,

protective eyewear 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 Stand-

ard, and provide employee skin care programmes.

Wear antistatic and flame-retardant clothing, if a local risk

assessment deems it so.

Protective measures : Personal protective equipment (PPE) should meet recom-

mended national standards. Check with PPE suppliers.

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.

Environmental exposure controls

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General advice : Local guidelines on emission limits for volatile substances

must be observed for the discharge of exhaust air containing

vapour.

Minimise release to the environment. An environmental assessment must be made to ensure compliance with local envi-

ronmental legislation.

Information on accidental release measures are to be found in

section 6.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour Clear colourless

Odour Mild hydrocarbon

Odour Threshold Data not available

pΗ Not applicable

Melting point/freezing point < -30 °C / -22 °F

Boiling point/boiling range 177 - 184 °C / 351 - 363 °F

Flash point 70 - 79 °C / 158 - 174 °F

Evaporation rate Data not available

Flammability

Flammability (solid, gas) Combustible liquid.

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit / up- : Data not available

per flammability limit

Lower explosion limit /

Lower flammability limit

Data not available

Vapour pressure < 480 Pa (estimated value(s) 38 °C / 100 °F)

Relative vapour density Data not available

Relative density Data not available

Density 752 - 754 kg/m3 (25 °C / 77 °F)

Method: ASTM D4052

Solubility(ies)

Water solubility $< 1 \text{ mg/l } (25 \,^{\circ}\text{C} / 77 \,^{\circ}\text{F})$

Partition coefficient: nlog Pow: 6.1

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octanol/water

Auto-ignition temperature : 235 °C / 455 °F

Decomposition temperature : Data not available

Viscosity

Viscosity, dynamic : < 2 mPa.s (estimated value(s) 20 °C / 68 °F)

Method: ASTM D445

Viscosity, kinematic : < 2 mm2/s (estimated value(s) 20 °C / 68 °F)

Method: ASTM D445

Explosive properties : no data available

Oxidizing properties : Data not available

Surface tension : Data not available

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 antistatic additives can greatly influence the conductivity of a liq-

uid

Molecular weight : Data not available

Particle size : Data not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : The product does not pose any further reactivity hazards in

addition to those listed in the following sub-paragraph.

Chemical stability : No hazardous reaction is expected when handled and stored

according to provisions

Stable under normal conditions of use.

Possibility of hazardous reac-

tions

Reacts with strong oxidising agents.

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

In certain circumstances product can ignite due to static elec-

tricity.

Incompatible materials : Strong oxidising agents.

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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 degra-

dation.

SECTION 11. TOXICOLOGICAL INFORMATION

Basis for assessment : Information given is based on data obtained from similar sub-

stances.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

ponent(s).

Information on likely routes of exposure

Exposure may occur via inhalation, ingestion, skin absorption, skin or eye contact, and accidental ingestion.

Acute toxicity

Product:

Acute oral toxicity : LD 50 (Rat, male and female): > 5,000 mg/kg

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

420

Remarks: Based on available data, the classification criteria

are not met. Low toxicity

LD50 >5000 mg/kg

Acute inhalation toxicity : LC 50 (Rat, male): > 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.

Low toxicity if inhaled.

Acute dermal toxicity : LD 50 (Rabbit, male and female): > 2,000 mg/kg

Method: OECD Test Guideline 402

Remarks: Based on available data, the classification criteria

are not met.

May be harmful in contact with skin. LD50 > 2000 - <= 5000 mg/kg

Components:

dodec-1-ene:

Acute oral toxicity : LD 50 (Rat, male and female): > 5,000 mg/kg

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

120

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Remarks: Based on available data, the classification criteria

are not met. Low toxicity

LD50 >5000 mg/kg

Acute inhalation toxicity : LC 50 (Rat, male): > 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.

Low toxicity if inhaled.

Acute dermal toxicity : LD 50 (Rabbit, male and female): > 2,000 mg/kg

Method: OECD Test Guideline 402

Remarks: May be harmful in contact with skin.

LD50 >2000 - <=5000 mg/kg

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

dec-1-ene:

Acute oral toxicity : LD 50 (Rat, male and female): > 5,000 mg/kg

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

420

Remarks: Based on available data, the classification criteria

are not met.

Acute inhalation toxicity : LC 50 (Rat, male): > 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 : LD 50 (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.

May be harmful in contact with skin. LD50 > 2000 - <= 5000 mg/kg

Skin corrosion/irritation

Product:

Species: Rabbit

Method: Test(s) equivalent or similar to OECD Test Guideline 404

Remarks: Causes mild skin irritation.

Components:

dodec-1-ene: Species: Rabbit

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Method: Test(s) equivalent or similar to OECD Test Guideline 404

Remarks: Causes mild skin irritation.

dec-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.

Serious eye damage/eye irritation

Product:

Species: Rabbit

Method: OECD Test Guideline 405

Remarks: Based on available data, the classification criteria are not met., Not irritating to eye.

Components:

dodec-1-ene: Species: Rabbit

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

Remarks: Based on available data, the classification criteria are not met., Not irritating to eye.

dec-1-ene:

Species: Rabbit

Method: OECD Test Guideline 405

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

Respiratory or skin sensitisation

Product:

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.

Not a sensitiser.

Components:

dodec-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. Not a sensitiser.

dec-1-ene:

Species: Guinea pig Method: Literature data

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

Germ cell mutagenicity

Product:

Genotoxicity in vitro : Method: OECD Test Guideline 471

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Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

Genotoxicity in vivo : Test species: Mouse

Method: OECD Test Guideline 471

Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

Germ cell mutagenicity- As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

Components:

dodec-1-ene:

Genotoxicity in vitro : Method: OECD Test Guideline 471

Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

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

473

Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

Genotoxicity in vivo : Test species: Mouse

Method: OECD Test Guideline 471

Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

Germ cell mutagenicity- As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

dec-1-ene:

Genotoxicity in vitro : Method: OECD Test Guideline 471

Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

Genotoxicity in vivo : Test species: Mouse

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

474

Remarks: Based on available data, the classification criteria

are not met., Non mutagenic

Germ cell mutagenicity- As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

Carcinogenicity

Product:

Carcinogenicity - Assess-

ment

: This product does not meet the criteria for classification in

categories 1A/1B.

Components:

dodec-1-ene:

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Carcinogenicity - Assess-

ment

: This product does not meet the criteria for classification in

categories 1A/1B.

dec-1-ene:

Carcinogenicity - Assess-

ment

: This product does not meet the criteria for classification in

categories 1A/1B.

IARC No component of this product present at levels greater than or

equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHA No component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

Product:

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., Does not impair fertility.

Effects on foetal develop-

ment

Species: Rat, female Application Route: Oral

Method: OECD Test Guideline 414

Remarks: Based on available data, the classification criteria

are not met., Not a developmental toxicant.

Reproductive toxicity - As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

Components:

dodec-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.

Does not impair fertility.

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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Effects on foetal develop-

ment

Species: Rat, female Application Route: Oral

Method: OECD Test Guideline 414

Remarks: Based on available data, the classification criteria

are not met., Not a developmental toxicant.

Reproductive toxicity - As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

dec-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.

Not expected to impair fertility.

Effects on foetal develop-

ment

Species: Rat, female Application Route: Oral

Method: OECD Test Guideline 414

Remarks: Based on available data, the classification criteria

are not met., Not a developmental toxicant.

Reproductive toxicity - As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

STOT - single exposure

Product:

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

Components:

dodec-1-ene:

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

dec-1-ene:

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

STOT - repeated exposure

Product:

Remarks: Based on available data, the classification criteria are not met., Repeated exposure may cause skin dryness or cracking.

Components:

dodec-1-ene:

Remarks: Based on available data, the classification criteria are not met., Repeated exposure may cause skin dryness or cracking.

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dec-1-ene:

Remarks: Based on available data, the classification criteria are not met., Repeated exposure may cause skin dryness or cracking.

Repeated dose toxicity

Product:

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 Test atmosphere: vapour

Method: Test(s) equivalent or similar to OECD Test Guideline 413

Target Organs: No specific target organs noted

Components:

dodec-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 Test atmosphere: vapour

Method: Test(s) equivalent or similar to OECD Test Guideline 413

Target Organs: No specific target organs noted

dec-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 Test atmosphere: vapour

Method: Test(s) equivalent or similar to OECD Test Guideline 413

Target Organs: No specific target organs noted

Aspiration toxicity

Product:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Components:

dodec-1-ene:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which

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can be fatal.

dec-1-ene:

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Further information

Product:

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

Components:

dodec-1-ene:

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

dec-1-ene:

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

SECTION 12. ECOLOGICAL INFORMATION

Basis for assessment : Incomplete ecotoxicological data are available for this product.

The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

ponent(s).

Ecotoxicity

Product:

Toxicity to fish (Acute toxici-

ty)

Remarks: Toxic

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$

Toxicity to daphnia and other :

aquatic invertebrates (Acute

toxicity)

Remarks: Toxic

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$

Toxicity to algae (Acute tox-

icity)

Remarks: Toxic

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$

Toxicity to fish (Chronic tox-

icity)

Remarks: Data not available

Toxicity to daphnia and other :

aquatic invertebrates (Chron-

ic toxicity)

Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

Toxicity to microorganisms

(Acute toxicity)

EC50 (Bacteria): Exposure time: 16 h

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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Method: Other guideline method. Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

No toxicity at the limit of solubility

Components:

dodec-1-ene:

Toxicity to fish (Acute toxici-

ty)

LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.0034 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates (Acute

toxicity)

EC50 (Daphnia magna (Water flea)): > 0.0028 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: No toxicity at the limit of solubility

Toxicity to algae (Acute tox-

icity)

EC50 (Pseudokirchneriella subcapitata (algae)): > 0.00093

mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Not toxic at limit of water solubility:

Toxicity to fish (Chronic tox-

icity)

Remarks: Data not available

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

Remarks: Data not available

Toxicity to microorganisms

(Acute toxicity)

NOEC (Secondary Effluent): 2 mg/l

Exposure time: 336 h

Method: OECD Test Guideline 301D Remarks: No toxicity at the limit of solubility

dec-1-ene:

Toxicity to fish (Acute toxici-

ty)

LC50 (Oncorhynchus mykiss (rainbow trout)): > 0.93 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 203

Remarks: Very toxic. LL/EL/IL50 <= 1 mg/l

Toxicity to daphnia and other : aquatic invertebrates (Acute

toxicity)

EC50 (Daphnia magna (Water flea)): 0.18 - 0.32 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Very toxic. LL/EL/IL50 <= 1 mg/l

Toxicity to algae (Acute tox-

icity)

EC50 (Pseudokirchneriella subcapitata (algae)): > 5.5 mg/l

Exposure time: 96 h

Method: OECD Test Guideline 201

Remarks: Very toxic.

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LL/EL/IL50 <= 1 mg/I

M-Factor (Acute aquatic tox-

icity)

1

Toxicity to fish (Chronic tox-:

icity)

Remarks: Data not available

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

NOEC (Daphnia magna (Water flea)): 19.4 mg/l

Exposure time: 21 d

Method: OECD Test Guideline 211

Remarks: NOEC/NOEL > 0.01 - <=0.1 mg/l

Toxicity to microorganisms

(Acute toxicity)

EC50 (Bacteria): Exposure time: 16 h Method: Other guideline method.

Remarks: Expected to be practically non toxic:

LL/EL/IL50 > 100 mg/l

No toxicity at the limit of solubility

Persistence and degradability

Product:

Biodegradation: 72.4 - 80.9 %

Exposure time: 28 d

Remarks: Readily biodegradable.

Components:

dodec-1-ene:

Biodegradability : Biodegradation: 72.4 - 74.5 %

Exposure time: 28 d

Method: OECD Test Guideline 301D Remarks: Readily biodegradable.

dec-1-ene:

Biodegradability : Biodegradation: 80.8 - 80.9 %

Exposure time: 28 d

Method: OECD Test Guideline 301F Remarks: Readily biodegradable.

Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Has the potential to bioaccumulate.

Components:

dodec-1-ene:

Bioaccumulation : Remarks: Has the potential to bioaccumulate.

dec-1-ene:

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Bioaccumulation : Remarks: Has the potential to bioaccumulate.

Mobility in soil

Product:

Mobility : Remarks: If it enters soil, it will adsorb to soil particles and will

not be mobile. Floats on water.

Components:

dodec-1-ene:

Mobility : Remarks: If it enters soil, it will adsorb to soil particles and will

not be mobile. Floats on water.

dec-1-ene:

Mobility : Remarks: If it enters soil, it will adsorb to soil particles and will

not be mobile. Floats on water.

Other adverse effects

Product:

Results of PBT and vPvB

assessment

: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

Components:

dodec-1-ene:

Results of PBT and vPvB

assessment

: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

Additional ecological infor-

mation

Data not available

dec-1-ene:

Results of PBT and vPvB

assessment

: The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : 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

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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> 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.

> 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

National Regulations

US Department of Transportation Classification (49 CFR Parts 171-180)

UN/ID/NA number : UN 3295

Proper shipping name : HYDROCARBONS, LIQUID, N.O.S.

: CBL Class Packing group : 111 Labels : NON ERG Code : 128 Marine pollutant

Remarks : This material is not regulated under 49 CFR if in a container of

119 gallon capacity or less.

International Regulations

IATA-DGR

UN/ID No. : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

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(1-Decene)

Class : 9
Packing group : III
Labels : 9

IMDG-Code

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID,

N.O.S.

(1-Decene)

Class : 9
Packing group : III
Labels : 9
Marine pollutant : yes

Maritime transport in bulk according to IMO instruments

Pollution category : X Ship type : 2

Product name : Olefin mixtures (C5-C15)

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.

Additional Information: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space

entry.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

*: This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)

Aspiration hazard

SARA 313 : This material does not contain any chemical components with

known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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Clean Water Act

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311. Table 117.3.

US State Regulations

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

Other regulations:

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

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

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reac- 1, 2, 0 tivity)

Full text of other abbreviations

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this docu-

ment can be looked up in reference literature (e.g. scientific

dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial

Hygienists

ADR = European Agreement concerning the International

Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances

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ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council

CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

DIN = Deutsches Institut fur Normung

DMEL = Derived Minimal Effect Level

DNEL = Derived No Effect Level

DSL = Canada Domestic Substance List

EC = European Commission

EC50 = Effective Concentration fifty

ECETOC = European Center on Ecotoxicology and Toxicolo-

gy Of Chemicals

ECHA = European Chemicals Agency

EINECS = The European Inventory of Existing Commercial

Chemical Substances

EL50 = Effective Loading fifty

ENCS = Japanese Existing and New Chemical Substances

Inventory

EWC = European Waste Code

GHS = Globally Harmonised System of Classification and

Labelling of Chemicals

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IC50 = Inhibitory Concentration fifty

IL50 = Inhibitory Level fifty

IMDG = International Maritime Dangerous Goods

INV = Chinese Chemicals Inventory

IP346 = Institute of Petroleum test method N° 346 for the

determination of polycyclic aromatics DMSO-extractables

KECI = Korea Existing Chemicals Inventory

LC50 = Lethal Concentration fifty

LD50 = Lethal Dose fifty per cent.

LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading

LL50 = Lethal Loading fifty

MARPOL = International Convention for the Prevention of

Pollution From Ships

NOEC/NOEL = No Observed Effect Concentration / No Ob-

served Effect Level

OE_HPV = Occupational Exposure - High Production Volume

PBT = Persistent, Bioaccumulative and Toxic

PICCS = Philippine Inventory of Chemicals and Chemical

Substances

PNEC = Predicted No Effect Concentration

REACH = Registration Evaluation And Authorisation Of

Chemicals

RID = Regulations Relating to International Carriage of Dan-

gerous Goods by Rail

SKIN_DES = Skin Designation

STEL = Short term exposure limit

TRA = Targeted Risk Assessment

TSCA = US Toxic Substances Control Act

TWA = Time-Weighted Average

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

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vPvB = very Persistent and very Bioaccumulative

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

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 date base, EC 1272 regulation, etc).

Revision Date : 11/01/2023

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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