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

Product information
Product Name: AlphaPlus® 1-DODECENE
Material: 1087853, 1037008, 1015429, 1021778

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

Emergency telephone:
Health: 866.442.9628 (North America)
1.832.813.4984 (International)
Transport: CHEMTREC 800.424.9300 or 703.527.3887(int'l)
Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090
EUROPE: BIG +32.14.584545 (phone) or +32.14.583516 (telefax)
Mexico CHEMTREC 01-800-681-9531 (24 hours)
South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600
Argentina: +(54)-1159839431

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

SECTION 2: Hazards identification

Classification of the substance or mixture
GHS Classification and labelling according to JIS Z7252-2014 and JIS Z7253-2012 (GHS 2011)

Classification
: Flammable liquids, Category 4
Aspiration hazard, Category 1

Labeling
Symbol(s): 

SDS Number: 100000068203 1/12
SAFETY DATA SHEET

AlphaPlus® 1-DODECENE

Version 1.14 Revision Date 2018-11-27

Section 1: Identification

Signal Word : Danger

Hazard Statements : H227: Combustible liquid.
H304: May be fatal if swallowed and enters airways.

Precautionary Statements : Prevention:
P210: Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P280: Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER/doctor.
P331: Do NOT induce vomiting.
P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

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 disposal plant.

Section 3: Composition/information on ingredients

Synonyms : NAO 12
Dodecene-1 (C12)
C12H24

Molecular formula : C12H24

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration</th>
<th>ENCS/ISHL number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-Dodecene</td>
<td>112-41-4</td>
<td>95 % - 100%</td>
<td>2-27</td>
</tr>
</tbody>
</table>

Section 4: First aid measures

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

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

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

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

If swallowed : Keep respiratory tract clear. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.
SECTION 5: Firefighting measures

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>77 °C (171 °F)</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>225 °C (437 °F)</td>
</tr>
<tr>
<td>Suitable extinguishing media</td>
<td>Carbon dioxide (CO2)</td>
</tr>
<tr>
<td>Unsuitable extinguishing media</td>
<td>High volume water jet</td>
</tr>
<tr>
<td>Special protective equipment for fire-fighters</td>
<td>Wear self-contained breathing apparatus for firefighting if necessary.</td>
</tr>
<tr>
<td>Further information</td>
<td>For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.</td>
</tr>
<tr>
<td>Fire and explosion protection</td>
<td>Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition.</td>
</tr>
</tbody>
</table>

SECTION 6: Accidental release measures

| Personal precautions                          | Use personal protective equipment. Ensure adequate ventilation. |
| Environmental precautions                     | Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods for cleaning up                       | Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Keep in suitable, closed containers for disposal. |

SECTION 7: Handling and storage

Handling

| Advice on safe handling                       | Avoid formation of aerosol. Do not breathe vapors/dust. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Provide sufficient air exchange and/or exhaust in work rooms. Dispose of rinse water in accordance with local and national regulations. |
| Advice on protection against fire and explosion | Do not spray on an open flame or any other incandescent material. Keep away from open flames, hot surfaces and sources of ignition. |
Storage

Requirements for storage areas and containers: No smoking. Keep container tightly closed in a dry and well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection

Engineering measures

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

Personal protective equipment

Respiratory protection: Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection: Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame-resistant clothing. Footwear protecting against chemicals.

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

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties
### Appearance
- **Form**: Liquid
- **Physical state**: Liquid
- **Color**: Clear, colorless

### Safety data
- **Flash point**: 77 °C (171 °F)
- **Lower explosion limit**: 0.6 %(V)
- **Upper explosion limit**: 5.4 %(V)
- **Oxidizing properties**: no
- **Autoignition temperature**: 225 °C (437 °F)
- **Thermal decomposition**: No data available
- **Molecular formula**: C12H24
- **Molecular weight**: 168.36 g/mol
- **pH**: Not applicable
- **Freezing point**: -35 °C (-31 °F)
- **Boiling point/boiling range**: 213 °C (415 °F)
- **Vapor pressure**: 19.30 Pa
  - at 25 °C (77 °F)
  - 0.35 kPa
  - at 65 °C (149 °F)
- **Relative density**: 0.76
  - at 15.6 °C (60.1 °F)
- **Density**: 0.76 g/m³
  - at 20 °C (68 °F)
  - 762 kg/m³
  - at 15 °C (59 °F)
  - 736 kg/m³
  - at 50 °C (122 °F)
- **Water solubility**: Soluble in hydrocarbon solvents; insoluble in water.
- **Partition coefficient: n-octanol/water**: No data available
- **Viscosity, kinematic**: 0.68 cSt
  - at 100 °C (212 °F)
- **Relative vapor density**: 5.81
  - (Air = 1.0)
Evaporation rate : No data available

SECTION 10: Stability and reactivity

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

Possibility of hazardous reactions

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

Hazardous reactions: Vapors may form explosive mixture with air.

Conditions to avoid : Heat, flames and sparks.

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

Thermal decomposition : No data available

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

SECTION 11: Toxicological information

Acute oral toxicity
1-Dodecene : LD50: > 10,000 mg/kg
Species: Rat
Sex: male
Method: Fixed Dose Method
Information given is based on data obtained from similar substances.

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

Skin irritation
1-Dodecene : No skin irritation

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

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

Repeated dose toxicity

1-Dodecene : Species: Rat, Male and female
Sex: Male and female
Application Route: Oral diet
Dose: 0, 100, 500, 1000 mg/kg
Exposure time: 13 wk
Number of exposures: daily
NOEL: 1,000 mg/kg
Method: OCED Guideline 408
Information given is based on data obtained from similar substances.

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

Genotoxicity in vitro

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

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

Reproductive toxicity

1-Dodecene : Species: Rat
Sex: male
Application Route: Oral diet
Dose: 0, 100, 500, or 1000 mg/kg
Exposure time: 44 D
Number of exposures: daily
Method: OECD Guideline 421
NOAEL Parent: 1,000 mg/kg
NOAEL F1: 1,000 mg/kg
Species: Rat  
Sex: female  
Application Route: Oral diet  
Dose: 0, 100, 500, or 1000 mg/kg  
Exposure time: 41-55 D  
Number of exposures: daily  
Method: OECD Guideline 421  
NOAEL Parent: 1,000 mg/kg  
NOAEL F1: 1,000 mg/kg  

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

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

AlphaPlus® 1-DODECENE  
Further information : Solvents may degrease the skin.

SECTION 12: Ecological information

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

Toxicity to daphnia and other aquatic invertebrates
1-Dodecene : No toxicity at the limit of solubility.

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

Biodegradability
1-Dodecene : 74.1 - 80 %  
Testing period: 28 d  
Method: OECD Test Guideline 301  
This material is expected to be readily biodegradable.

Bioaccumulation
1-Dodecene : No data available
Mobility
1-Dodecene: No data available

Results of PBT assessment
1-Dodecene: Non-classified PBT substance, Non-classified vPvB substance

Additional ecological information

Ecotoxicology Assessment

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

SECTION 13: Disposal considerations

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

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

Product: Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

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

SECTION 14: Transport information

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

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

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)
UN3295, HYDROCARBONS, LIQUID, N.O.S., (1-DODECENE), COMBUSTIBLE LIQUID, III

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (1-DODECENE), 9, III, (77 °C), MARINE POLLUTANT, (1-DODECENE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

SDS Number: 100000068203 9/12
AlphaPlus® 1-DODECENE

Version 1.14

SAFETY DATA SHEET

UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (1-DODECENE), 9, III

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (1-DODECENE), 9, III

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))
UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (1-DODECENE), 9, III

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)
UN9003, SUBSTANCES WITH A FLASH-POINT ABOVE 60 °C AND NOT MORE THAN 100 °C, 9, ENVIRONMENTALLY HAZARDOUS, (1-DODECENE)

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

Other information : 1-Dodecene, S.T. 2, Cat. Y

SECTION 15: Regulatory information

National legislation
Poisonous and Deleterious Substances Control Law
: Not applicable

Industrial Safety and Health Law
Substances Subject to be Notified Names
: Not applicable
Enforcement Order of the Industrial Safety and Health Law - Attached table 1 (Dangerous Substances)

Harmful Substances Required Permission for Manufacture
: Not applicable
Hazardous Substances Subject to Labeling Requirements
: Not applicable
Ordinance on Prevention of Organic Solvent Poisoning
: Not applicable
Ordinance on Prevention of Lead Poisoning
: Not applicable
Harmful Substances Prohibited from Manufacture
: Not applicable
Ordinance on Prevention of
### Hazards Due to Specified Chemical Substances

<table>
<thead>
<tr>
<th>Ordinance on Prevention of Tetraalkyl Lead Poisoning</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substances Prevented From Impairment of Health</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Listed</td>
</tr>
</tbody>
</table>

### Chemical Substance Control Law

: Not applicable for Specified Chemical Substance, Monitoring Chemical Substance and Priority Assessment Chemical Substance.

### Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof

: Not applicable

### Other regulations

<table>
<thead>
<tr>
<th>Fire Service Law</th>
<th>Flammable liquids Type 3 petroleums Hazardous rank III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Pollution and Sea Disaster Prevention etc Law</td>
<td>Marine pollutant</td>
</tr>
</tbody>
</table>

### Notification status

<table>
<thead>
<tr>
<th>Europe REACH</th>
<th>On the inventory, or in compliance with the inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States of America (USA)</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>TSCA</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Canada DSL</td>
<td>On the inventory, or in compliance with the inventory</td>
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<tr>
<td>Australia AICS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>New Zealand NZIoC</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>Japan ENCS</td>
<td>On the inventory, or in compliance with the inventory</td>
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<tr>
<td>Korea KECI</td>
<td>On the inventory, or in compliance with the inventory</td>
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<tr>
<td>Philippines PICCS</td>
<td>On the inventory, or in compliance with the inventory</td>
</tr>
<tr>
<td>China IECSC</td>
<td>On the inventory, or in compliance with the inventory</td>
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</tbody>
</table>

### SECTION 16: Other information

### Further information

<table>
<thead>
<tr>
<th>Legacy SDS Number</th>
<th>PE0019</th>
</tr>
</thead>
</table>

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

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

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

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>American Conference of Government Industrial Hygienists</td>
</tr>
<tr>
<td>AICS</td>
<td>Australia, Inventory of Chemical Substances</td>
</tr>
<tr>
<td>DSL</td>
<td>Canada, Domestic Substances List</td>
</tr>
<tr>
<td>NDSL</td>
<td>Canada, Non-Domestic Substances List</td>
</tr>
<tr>
<td>CNS</td>
<td>Central Nervous System</td>
</tr>
<tr>
<td>CAS</td>
<td>Chemical Abstract Service</td>
</tr>
<tr>
<td>EC50</td>
<td>Effective Concentration</td>
</tr>
<tr>
<td>ECG50</td>
<td>Effective Concentration 50%</td>
</tr>
<tr>
<td>EOSCA</td>
<td>European Oilfield Specialty Chemicals Association</td>
</tr>
<tr>
<td>EINECS</td>
<td>European Inventory of Existing Chemical Substances</td>
</tr>
<tr>
<td>MAK</td>
<td>Germany Maximum Concentration Values</td>
</tr>
<tr>
<td>GHS</td>
<td>Globally Harmonized System</td>
</tr>
<tr>
<td>IC50</td>
<td>Inhibition Concentration 50%</td>
</tr>
<tr>
<td>IARC</td>
<td>International Agency for Research on Cancer</td>
</tr>
<tr>
<td>IECSC</td>
<td>Inventory of Existing Chemical Substances in China</td>
</tr>
<tr>
<td>ENCS</td>
<td>Japan, Inventory of Existing and New Chemical Substances</td>
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<tr>
<td>KECl</td>
<td>Korea, Existing Chemical Inventory</td>
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<tr>
<td>LC50</td>
<td>Lethal Concentration 50%</td>
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<tr>
<td>NIOSH</td>
<td>National Institute for Occupational Safety &amp; Health</td>
</tr>
<tr>
<td>NFPA</td>
<td>National Fire Protection Agency</td>
</tr>
<tr>
<td>NTP</td>
<td>National Toxicology Program</td>
</tr>
<tr>
<td>NZIoC</td>
<td>New Zealand Inventory of Chemicals</td>
</tr>
<tr>
<td>NOAEL</td>
<td>No Observable Adverse Effect Level</td>
</tr>
<tr>
<td>NOEC</td>
<td>No Observed Effect Concentration</td>
</tr>
<tr>
<td>PEL</td>
<td>Permissible Exposure Limit</td>
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<tr>
<td>PICCS</td>
<td>Philippines Inventory of Commercial Chemical Substances</td>
</tr>
<tr>
<td>PRNT</td>
<td>Presumed Not Toxic</td>
</tr>
<tr>
<td>RCRA</td>
<td>Resource Conservation Recovery Act</td>
</tr>
<tr>
<td>STEL</td>
<td>Short-term Exposure Limit</td>
</tr>
<tr>
<td>SARA</td>
<td>Superfund Amendments and Reauthorization Act.</td>
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<tr>
<td>TLV</td>
<td>Threshold Limit Value</td>
</tr>
<tr>
<td>TWA</td>
<td>Time Weighted Average</td>
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<tr>
<td>TSCA</td>
<td>Toxic Substance Control Act</td>
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<tr>
<td>UVCB</td>
<td>Unknown or Variable Composition, Complex Reaction Products, and Biological Materials</td>
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<tr>
<td>WHMIS</td>
<td>Workplace Hazardous Materials Information System</td>
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</table>