# SECTION 1: Identification

<table>
<thead>
<tr>
<th>1.1. Product identifier</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Product name</td>
<td>4-PHENYL-1-BUTENE</td>
</tr>
<tr>
<td>Product code</td>
<td>ENEP3610</td>
</tr>
<tr>
<td>Product form</td>
<td>Substance</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Formula</td>
<td>C10H12</td>
</tr>
<tr>
<td>Synonyms</td>
<td>4-PHENYLBUT-1-ENE</td>
</tr>
<tr>
<td>Chemical family</td>
<td>HYDROCARBON</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2. Recommended use of the chemical and restrictions on use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended use</td>
<td>Chemical intermediate</td>
</tr>
<tr>
<td></td>
<td>For research and industrial use only</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3. Details of the supplier of the safety data sheet</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>GELEST, INC.</td>
<td></td>
</tr>
<tr>
<td>11 East Steel Road</td>
<td></td>
</tr>
<tr>
<td>Morrisville, PA 19067</td>
<td></td>
</tr>
<tr>
<td>USA</td>
<td></td>
</tr>
<tr>
<td>T 215-547-1015 - F 215-547-2484</td>
<td></td>
</tr>
<tr>
<td>(M-F): 8:00 AM - 5:30 PM EST</td>
<td></td>
</tr>
<tr>
<td><a href="mailto:info@gelest.com">info@gelest.com</a> - <a href="http://www.gelest.com">www.gelest.com</a></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.4. Emergency telephone number</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Emergency number</td>
<td>CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)</td>
</tr>
</tbody>
</table>

## SECTION 2: Hazard(s) identification

### 2.1. Classification of the substance or mixture

**GHS-US classification**

- Flammable liquids Category 3  
  - H226
- Skin corrosion/irritation Category 2  
  - H315
- Hazardous to the aquatic environment - Acute Hazard Category 2  
  - H401

Full text of H statements: see section 16

### 2.2. Label elements

**GHS-US labeling**

<table>
<thead>
<tr>
<th>Hazard pictograms (GHS-US)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="GHS02" /> <img src="image" alt="GHS07" /></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Signal word (GHS-US)</th>
<th>Warning</th>
</tr>
</thead>
</table>
| Hazard statements (GHS-US) | H226 - Flammable liquid and vapor  
  | H315 - Causes skin irritation  
  | H401 - Toxic to aquatic life |

<table>
<thead>
<tr>
<th>Precautionary statements (GHS-US)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>P280 - Wear protective gloves/protective clothing/eye protection/face protection</td>
<td></td>
</tr>
<tr>
<td>P210 - Keep away from heat, open flames, sparks. - No smoking</td>
<td></td>
</tr>
<tr>
<td>P233 - Keep container tightly closed</td>
<td></td>
</tr>
<tr>
<td>P240 - Ground/Bond container and receiving equipment</td>
<td></td>
</tr>
<tr>
<td>P241 - Use explosion-proof electrical equipment</td>
<td></td>
</tr>
<tr>
<td>P242 - Use only non-sparking tools</td>
<td></td>
</tr>
<tr>
<td>P243 - Take precautionary measures against static discharge</td>
<td></td>
</tr>
<tr>
<td>P264 - Wash hands thoroughly after handling</td>
<td></td>
</tr>
<tr>
<td>P273 - Avoid release to the environment</td>
<td></td>
</tr>
<tr>
<td>P303 + P361 + P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse skin with water/shower</td>
<td></td>
</tr>
<tr>
<td>P332 + P313 - If skin irritation occurs: Get medical advice/attention</td>
<td></td>
</tr>
<tr>
<td>P321 - Specific treatment (see first aid instructions on this label)</td>
<td></td>
</tr>
<tr>
<td>P362 + P364 - Take off contaminated clothing and wash it before reuse</td>
<td></td>
</tr>
<tr>
<td>P370 + P378 - In case of fire: Use water spray or fog, foam, carbon dioxide, dry chemical to extinguish</td>
<td></td>
</tr>
<tr>
<td>P403 + P235 - Keep in a cool place</td>
<td></td>
</tr>
<tr>
<td>P501 - Dispose of contents/container to licensed waste disposal facility</td>
<td></td>
</tr>
</tbody>
</table>
4-PHENYL-1-BUTENE
Safety Data Sheet

2.3. Hazards not otherwise classified (HNOC)
No additional information available

2.4. Unknown acute toxicity (GHS US)
No data available

SECTION 3: Composition/Information on ingredients

3.1. Substance

<table>
<thead>
<tr>
<th>Substance</th>
<th>Substance type</th>
<th>Name</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-Phenylbut-1-ene</td>
<td>Multi-constituent</td>
<td>(CAS No) 768-56-9</td>
<td>95 - 100</td>
</tr>
<tr>
<td>Benzyl alcohol</td>
<td></td>
<td>(CAS No) 100-51-6</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>

GHS-US classification:
- Flam. Liq. 3, H226
- Skin Irrit. 2, H315
- Aquatic Acute 2, H401
- Acute Tox. 4 (Oral), H302
- Acute Tox. 4 (Dermal), H312

Full text of hazard classes and H-statements: see section 16

3.2. Mixture
Not applicable

4.1. Description of first aid measures

First-aid measures general: Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact: Wash with plenty of soap and water. Get medical advice/attention.

First-aid measures after eye contact: Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion: Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation: May cause irritation to the respiratory tract.

Symptoms/injuries after skin contact: Causes skin irritation. May be harmful in contact with skin.

Symptoms/injuries after eye contact: May cause eye irritation.

Symptoms/injuries after ingestion: May be harmful if swallowed.

4.3. Indication of any immediate medical attention and special treatment needed
No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media


Unsuitable extinguishing media: None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard: Flammable liquid and vapor. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

Explosion hazard: May form flammable/explosive vapor-air mixture.

5.3. Advice for firefighters

Firefighting instructions: Exercise caution when fighting any chemical fire. Use water spray or fog for cooling exposed containers.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapor and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures: Eliminate ignition sources. Use special care to avoid static electric charges.

6.1.1. For non-emergency personnel

Protective equipment: Wear protective equipment as described in Section 8.

Emergency procedures: Evacuate unnecessary personnel.
6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: “Exposure controls/personal protection”.

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Clean up any spills as soon as possible, using an absorbent material to collect it. Use only non-sparking tools.

6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Additional hazards when processed: Handle empty containers with care because residual vapors are flammable. Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapor and mist. Ground/bond container and receiving equipment. Provide good ventilation in process area to prevent accumulation of vapors. Take precautionary measures against static discharge. Use only non-sparking tools.

Hygiene measures: Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Technical measures: Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.

Storage conditions: Keep container tightly closed. Keep in a cool place.

Incompatible materials: Oxidizing agent.

Storage area: Store in a well-ventilated place. Store away from heat.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls: Provide local exhaust or general room ventilation.

Personal protective equipment: Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection: Neoprene or nitrile rubber gloves.

Eye protection: Chemical goggles. Contact lenses should not be worn.

Skin and body protection: Wear suitable protective clothing.

Respiratory protection: Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. NIOSH-certified organic vapor (black cartridge) respirator.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state: Liquid

Appearance: Clear liquid.

Molecular mass: 132.2 g/mol

Color: Straw.

Odor: No data available

Odor threshold: No data available

Refractive index: 1.507

pH: No data available

Relative evaporation rate (butyl acetate=1): < 1

Melting point: -71 °C

Freezing point: No data available

Boiling point: 185 °C
4-PHENYL-1-BUTENE
Safety Data Sheet

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point</td>
<td>57 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>445 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>Flammable liquid and vapor</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>25 mm Hg @ 20°C</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>0.882</td>
</tr>
<tr>
<td>Solubility</td>
<td>Insoluble in water. Water: 0.017 g/l @ 20°C</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>No data available</td>
</tr>
</tbody>
</table>

9.2. Other information
No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity
No additional information available

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
No additional information available

10.4. Conditions to avoid
Heat. Open flame. Sparks.

10.5. Incompatible materials
Oxidizing agent.

10.6. Hazardous decomposition products
Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : Not classified

**4-Phenylbut-1-ene (768-56-9)**
- LD50 oral rat : 3429 mg/kg
- LD50 dermal rabbit : > 2000 mg/kg
- ATE US (oral) : 3429.000 mg/kg body weight

**Benzyl alcohol (100-51-6)**
- LD50 oral rat : 1230 mg/kg
- LD50 dermal rat : 2000 mg/kg
- LD50 intraperitoneal rat : 400 mg/kg
- LC50 inhalation rat : > 500 mg/m³
- ATE US (oral) : 1230.000 mg/kg body weight
- ATE US (dermal) : 2000.000 mg/kg body weight

Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Not classified
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

None of the components in this product at concentrations >0.1% are listed by IARC, NTP, OSHA or ACGIH as a carcinogen

Reproductive toxicity : Not classified
4-PHENYL-1-BUTENE
Safety Data Sheet

Specific target organ toxicity (single exposure) : Not classified
Specific target organ toxicity (repeated exposure) : Not classified
Repeated exposure can cause kidney damage
Aspiration hazard : Not classified
Symptoms/injuries after inhalation : May cause irritation to the respiratory tract.
Symptoms/injuries after skin contact : Causes skin irritation. May be harmful in contact with skin.
Symptoms/injuries after eye contact : May cause eye irritation.
Symptoms/injuries after ingestion : May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity
Ecology - general : Very toxic to aquatic life.

| 4-Phenylbut-1-ene (768-56-9) |  
| EC50 Daphnia 1 | 10 mg/l |

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

12.4. Mobility in soil
No additional information available

12.5. Other adverse effects
Effect on ozone layer : No additional information available
Effect on the global warming : No known effects from this product.
GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Sewage disposal recommendations : Do not dispose of waste into sewer.
Incinerate. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.

Waste disposal recommendations : Incinerate. Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility.

Additional information : Handle empty containers with care because residual vapors are flammable.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
UN-No.(DOT) : 3295
DOT NA no. : UN3295

14.2. UN proper shipping name
Transport document description : UN3295 Hydrocarbons, liquid, n.o.s. (4-PHENYL-1-BUTENE), 3, III
Proper Shipping Name (DOT) : Hydrocarbons, liquid, n.o.s. (4-PHENYL-1-BUTENE)
Class (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Packing group (DOT) : III - Minor Danger
Hazard labels (DOT) : 3 - Flammable liquid

DOT Packaging Non Bulk (49 CFR 173.xxx) : 203
DOT Packaging Bulk (49 CFR 173.xxx) : 242
DOT Packaging Exceptions (49 CFR 173.xxx) : 150

14.3. Additional information
Emergency Response Guide (ERG) Number : 128
4-PHENYL-1-BUTENE
Safety Data Sheet

Other information : No supplementary information available.

Transport by sea
DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel

Air transport
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 60 L
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 220 L

SECTION 15: Regulatory information

15.1. US Federal regulations

4-PHENYL-1-BUTENE (768-56-9)
TSCA Exemption/Exclusion : Low Volume Exemption in accordance with 40 CFR 723.50(c)(1). This LVE limits site of manufacture of this substance to Gelest, Inc. unless otherwise approved by U.S. EPA

4-Phenybut-1-ene (768-56-9)
Not listed on the United States TSCA (Toxic Substances Control Act) inventory

Benzyl alcohol (100-51-6)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA
No additional information available

Benzyl alcohol (100-51-6)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations
4-Phenybut-1-ene (768-56-9)
Listed on ELINCS (European List of Notified Chemical Substances)

Benzyl alcohol (100-51-6)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
4-Phenybut-1-ene (768-56-9)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Benzyl alcohol (100-51-6)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Korean ECL (Existing Chemicals List)
Listed on INSOQ (Mexican National Inventory of Chemical Substances)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

15.3. US State regulations
No additional information available

SECTION 16: Other information

Full text of H-phrases:

H226 Flammable liquid and vapor
H302 Harmful if swallowed
H312 Harmful in contact with skin
H315 Causes skin irritation
H401 Toxic to aquatic life
4-PHENYL-1-BUTENE
Safety Data Sheet

Abbreviations and acronyms: Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemical Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling.

HMIS III Rating

Health: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability: 3 Serious Hazard - Materials capable of ignition under almost all normal temperature conditions. Includes flammable liquids with flash points below 73 F and boiling points above 100 F. as well as liquids with flash points between 73 F and 100 F. (Classes IB & IC)
Physical: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.

Prepared by safety and environmental affairs.

Date of issue: 11/03/2016 Version: 1.0

SDS US (GHS HazCom 2012) - Custom

According to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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