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

## 1.1. Product identifier

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product form</td>
<td>Substance</td>
</tr>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Substance name</td>
<td>5-VINYL-2-NORBORNENE, 95%</td>
</tr>
<tr>
<td>Product code</td>
<td>ENEV4830</td>
</tr>
<tr>
<td>Formula</td>
<td>C9H12</td>
</tr>
<tr>
<td>Synonyms</td>
<td>5-VINYLNORBORN-2-ENE</td>
</tr>
<tr>
<td>Chemical family</td>
<td>HYDROCARBON</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Use of the substance/mixture</th>
<th>Chemical intermediate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>For research and industrial use only</td>
</tr>
</tbody>
</table>

## 1.3. Details of the supplier of the safety data sheet

**GELEST, INC.**  
11 East Steel Road  
Morrisville, PA 19067  
USA  
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST  
info@gelest.com - www.gelest.com

## 1.4. Emergency telephone number

**Emergency number**  
CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

# SECTION 2: Hazards identification

## 2.1. Classification of the substance or mixture

- **GHS-US classification**  
  Flamm. Liq. 3  H226

  
  Full text of H-phrases: see section 16

## 2.2. Label elements

- **GHS-US labeling**  
  Hazard pictograms (GHS-US)  
  ![Hazard pictogram](image)

- **Signal word (GHS-US)**  
  Warning

- **Hazard statements (GHS-US)**  
  H226 - Flammable liquid and vapor

- **Precautionary statements (GHS-US)**  
  P280 - Wear protective gloves/protective clothing/eye protection/face protection
  P210 - Keep away from heat, open flames, sparks. - No smoking
  P233 - Keep container tightly closed
  P240 - Ground/bond container and receiving equipment
  P241 - Use explosion-proof electrical equipment
  P242 - Use only non-sparking tools
  P243 - Take precautionary measures against static discharge
  P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. Rinse skin with water/shower
  P370+P378 - In case of fire: Use water spray or fog, foam, carbon dioxide, dry chemical to extinguish
  P403+P235 - Keep in a cool place
  P501 - Dispose of contents/container to licensed waste disposal facility.

## 2.3. Other hazards

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>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-Vinyl-2-norbornene</td>
<td>(CAS No) 3048-64-4</td>
<td>97 - 100</td>
<td>Flam. Liq. 3, H226</td>
</tr>
</tbody>
</table>

3.2. Mixture

Not applicable

SECTION 4: First aid measures

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: No information available.

Symptoms/injuries after skin contact: May cause mild skin irritation.

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: Do not use straight streams.

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 every possible source of ignition. 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

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. Sweep or shovel spills into appropriate container for disposal. 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. Provide good ventilation in process area to prevent accumulation of vapors. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. Use only non-sparking tools.
Hygiene measures: Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Wash contaminated clothing before reuse.

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.

7.3. Specific end use(s)
No additional information available

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: 120.19 g/mol
Color: Straw.
Odor: Pungent.
Odor threshold: No data available
Refractive index: 1.481
pH: No data available
Relative evaporation rate (butyl acetate=1): ~ 1
Melting point: No data available
Freezing point: < -80 °C
Boiling point: 141 °C
Flash point: 28 °C
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): Flammable liquid and vapor
Vapor pressure: ~ 10 mm Hg @ 20°C
5-VINYL-2-NORBORNENE, 95%
Safety Data Sheet

### Relative vapor density at 20 °C: 4.1
### Relative density: 0.841
### VOC content: 100 %
### Solubility: Insoluble in water.
### Log Pow: No data available
### Log Kow: No data available
### Viscosity, kinematic: No data available
### Viscosity, dynamic: No data available
### Explosive properties: No data available
### Oxidizing properties: No data available
### Explosion limits: No data available

#### 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**
Hazardous polymerization may occur if stored at elevated temperature (>50°C).

**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

<table>
<thead>
<tr>
<th>Substance</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>5190 µl/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat (ppm)</td>
<td>2231 ppm/4h</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>2231.000 ppmV/4h</td>
</tr>
</tbody>
</table>

**Skin corrosion/irritation:** Not classified

**Serious eye damage/irritation:** Not classified

**Respiratory or skin sensitization:** Not classified

**Germ cell mutagenicity:** Not classified

Ames test (histidine reversion) is negative, i.e not a mutagen.

**Carcinogenicity:** Not classified

**Reproductive toxicity:** Not classified

**Specific target organ toxicity (single exposure):** Not classified

**Specific target organ toxicity (repeated exposure):** Not classified

**Aspiration hazard:** Not classified

**Symptoms/injuries after inhalation:** No information available.

**Symptoms/injuries after skin contact:** May cause mild skin irritation.

**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**
No additional information available

**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
Other adverse effects: This substance may be hazardous to the environment.
Effect on ozone layer: No additional information available
Effect on the global warming: No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Sewage disposal recommendations: Do not dispose of waste into sewer.
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) : 1993
DOT NA no. : UN1993

14.2. UN proper shipping name
Proper Shipping Name (DOT) : Flammable liquids, n.o.s.
(5-VINYL-2-NORBORNENE)
Transport hazard class(es) (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT) : 3 - Flammable liquid

DOT Symbols
Packaging group (DOT) : III - Minor Danger
DOT Packaging Exceptions (49 CFR 173.xxx) : 150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 203
DOT Packaging Bulk (49 CFR 173.xxx) : 242

14.3. Additional information
Emergency Response Guide (ERG) Number : 3L
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
5-Vinyl-2-norbornene (3048-64-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
5-VINYL-2-NORBORNENE, 95%
Safety Data Sheet

5-Vinyl-2-norborenene (3048-64-4)
Listed on the Canadian NDSL (Non-Domestic Substances List)
Listed on IECS (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Japanese ISHL (Industrial Safety and Health Law)
Listed on the Korean ECL (Existing Chemicals List)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican national Inventory of Chemical Substances)

15.3. US State regulations

<table>
<thead>
<tr>
<th>Section</th>
<th>U.S. - California - Proposition 65</th>
<th>U.S. - California - Proposition 65</th>
<th>U.S. - California - Proposition 65</th>
<th>Non-significant risk level (NSRL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 16: Other information

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; TWA: time weighted average; 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.

Full text of H-phrases:
- Flam. Liq. 3: Flammable liquids Category 3
- H226: Flammable liquid and vapor

HMIS III Rating
- Health: 2 Moderate Hazard - Temporary or minor injury may occur
- Flammability: 3 Serious Hazard
- Physical: 1 Slight Hazard

Prepared by safety and environmental affairs.

Date of issue: 10/12/2015  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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