# SECTION 1: Identification

<table>
<thead>
<tr>
<th>1.1. Identification</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product name</strong></td>
<td>1,2-EPOXY-5-HEXENE</td>
</tr>
<tr>
<td><strong>Product code</strong></td>
<td>ENEE1025</td>
</tr>
<tr>
<td><strong>Product form</strong></td>
<td>Substance</td>
</tr>
<tr>
<td><strong>Physical state</strong></td>
<td>Liquid</td>
</tr>
<tr>
<td><strong>Formula</strong></td>
<td>C6H10O</td>
</tr>
<tr>
<td><strong>Synonyms</strong></td>
<td>2-(3-BUTENYL)OXIRANE; DIALLYL MONOXIDE; OXIRANE, 3-BUTENYL-; 5,6-EPOXYHEX-1-ENE</td>
</tr>
<tr>
<td><strong>Chemical family</strong></td>
<td>EPOXY COMPOUND</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.2. Recommended use and restrictions on use</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recommended use</strong></td>
<td>Chemical intermediate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.3. Supplier</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GELEST, INC.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>11 East Steel Road</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Morrisville, PA 19067</strong></td>
<td></td>
</tr>
<tr>
<td><strong>USA</strong></td>
<td></td>
</tr>
<tr>
<td><strong>T 215-547-1015 - F 215-547-2484</strong></td>
<td></td>
</tr>
<tr>
<td><strong><a href="mailto:info@gelest.com">info@gelest.com</a></strong></td>
<td><strong><a href="http://www.gelest.com">www.gelest.com</a></strong></td>
</tr>
</tbody>
</table>

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

# SECTION 2: Hazard(s) identification

<table>
<thead>
<tr>
<th>2.1. Classification of the substance or mixture</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GHS-US classification</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Flammable liquids Category 2</strong></td>
<td>H225 - Highly flammable liquid and vapor</td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation Category 2</strong></td>
<td>H315 - Causes skin irritation</td>
</tr>
<tr>
<td><strong>Serious eye damage/eye irritation Category 2A</strong></td>
<td>H319 - Causes serious eye irritation</td>
</tr>
<tr>
<td><strong>Full text of H statements</strong>: see section 16</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2.2. GHS Label elements, including precautionary statements</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GHS US labelling</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Hazard pictograms (GHS US)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Signal word (GHS US)</strong></td>
<td>Danger</td>
</tr>
<tr>
<td><strong>Hazard statements (GHS US)</strong></td>
<td>H225 - Highly flammable liquid and vapor</td>
</tr>
<tr>
<td></td>
<td>H315 - Causes skin irritation</td>
</tr>
<tr>
<td></td>
<td>H319 - Causes serious eye irritation</td>
</tr>
<tr>
<td><strong>Precautionary statements (GHS US)</strong></td>
<td>P280 - Wear protective gloves/protective clothing/eye protection/face protection.</td>
</tr>
<tr>
<td></td>
<td>P210 - Keep away from heat, open flames, sparks. - No smoking.</td>
</tr>
<tr>
<td></td>
<td>P233 - Keep container tightly closed.</td>
</tr>
<tr>
<td></td>
<td>P240 - Ground/Bond container and receiving equipment</td>
</tr>
<tr>
<td></td>
<td>P241 - Use explosion-proof electrical equipment</td>
</tr>
<tr>
<td></td>
<td>P242 - Use only non-sparking tools.</td>
</tr>
<tr>
<td></td>
<td>P243 - Take precautionary measures against static discharge.</td>
</tr>
<tr>
<td></td>
<td>P264 - Wash hands thoroughly after handling.</td>
</tr>
<tr>
<td></td>
<td>P303+P361+P353 - If on skin (or hair): take off immediately all contaminated clothing. rinse skin with water/shower</td>
</tr>
<tr>
<td></td>
<td>P332+P313 - If skin irritation occurs: Get medical advice/attention.</td>
</tr>
<tr>
<td></td>
<td>P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing</td>
</tr>
<tr>
<td></td>
<td>P337+P313 - If eye irritation persists: Get medical advice/attention.</td>
</tr>
<tr>
<td></td>
<td>P321 - Specific treatment (see first aid instructions on this label)</td>
</tr>
<tr>
<td></td>
<td>P362+P364 - Take off contaminated clothing and wash it before reuse.</td>
</tr>
<tr>
<td></td>
<td>P370+P378 - In case of fire: Use water spray or fog, foam, carbon dioxide, dry chemical to extinguish.</td>
</tr>
<tr>
<td></td>
<td>P403+P235 - Keep in a cool place</td>
</tr>
<tr>
<td></td>
<td>P501 - Dispose of contents/container to licensed waste disposal facility.</td>
</tr>
</tbody>
</table>
2.3. Hazards not otherwise classified (HNOC)
No additional information available

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances
Substance type : Mono-constituent
Name : 1,2-EPOXY-5-HEXENE
CAS-No. : 10353-53-4

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2-Epoxy-5-hexene</td>
<td>(CAS-No.) 10353-53-4</td>
<td>95 - 100</td>
<td>Flm. Liq. 2, H225</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319</td>
</tr>
</tbody>
</table>

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

3.2. Mixtures
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. IF exposed or concerned: Get medical advice/attention.

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 (acute and delayed)
Symptoms/effects after inhalation : May cause irritation to the respiratory tract.
Symptoms/effects after skin contact : Causes skin irritation.
Symptoms/effects after eye contact : Causes serious eye irritation.
Symptoms/effects after ingestion : May be harmful if swallowed.

4.3. Immediate medical attention and special treatment, if necessary
No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media
Unsuitable extinguishing media : Do not use straight streams.

5.2. Specific hazards arising from the chemical
Fire hazard : Highly 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. Special protective equipment and precautions for fire-fighters
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, open flames, sparks. - 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 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.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>1,2-Epoxy-5-hexene (10353-53-4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
</tr>
<tr>
<td>OSHA</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>44 mg/m³</td>
</tr>
</tbody>
</table>

8.2. Appropriate engineering controls

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

8.3. Individual protection measures/Personal protective equipment

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.
1,2-EPOXY-5-HEXENE
Safety Data Sheet

Molecular mass : 98.14 g/mol
Color : Straw.
Odor : No data available
Odor threshold : No data available
Refractive index : 1.424
pH : No data available
Relative evaporation rate (butyl acetate=1) : < 1
Melting point : No data available
Freezing point : < 0 °C
Boiling point : 120 °C
Flash point : 16 °C
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Flammability (solid, gas) : Highly flammable liquid and vapor
Vapor pressure : < 15 mm Hg @ 20°C
Relative vapor density at 20 °C : > 1
Relative density : 0.87
% Volatiles : < 3 %
Solubility : Soluble 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
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 at elevated temperatures.

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
Skin corrosion/irritation : Causes skin irritation.
Serious eye damage/irritation : Causes serious eye irritation.
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
Specific target organ toxicity – single exposure : Not classified
### Specific target organ toxicity – repeated exposure
- Not classified

### Aspiration hazard
- Not classified

### Symptoms/effects after inhalation
- May cause irritation to the respiratory tract.

### Symptoms/effects after skin contact
- Causes skin irritation.

### Symptoms/effects after eye contact
- Causes serious eye irritation.

### Symptoms/effects after ingestion
- May be harmful if swallowed.

### Reason for classification
- Expert judgment

### 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 the ozone layer: No additional information available

### SECTION 13: Disposal considerations

13.1. **Disposal methods**
- Sewage disposal recommendations: Do not dispose of waste into sewer.
- Product/Packaging 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**
- Transport document description: UN1993 Flammable liquids, n.o.s. (1,2-EPOXY-5-HEXENE), 3, II
- Proper Shipping Name (DOT): Flammable liquids, n.o.s. (1,2-EPOXY-5-HEXENE)
- Class (DOT): 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
- Packing group (DOT): II - Medium Danger
- Hazard labels (DOT): 3 - Flammable liquid

- DOT Packaging Bulk (49 CFR 173.xxx): 242
- DOT Packaging Exceptions (49 CFR 173.xxx): 150
- DOT Symbols: G - Identifies PSN requiring a technical name

14.3. **Additional information**
- Emergency Response Guide (ERG) Number: 128
- Other information: No supplementary information available.
1,2-EPOXY-5-HEXENE
Safety Data Sheet

Transport by sea
DOT Vessel Stowage Location : B - (i) The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) “On deck only” on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Air transport
DOT Quantity Limitations Passenger aircraft/rail : 5 L
(49 CFR 173.27)
DOT Quantity Limitations Cargo aircraft only : 60 L
(49 CFR 175.75)

SECTION 15: Regulatory information

15.1. US Federal regulations
1,2-EPOXY-5-HEXENE (10353-53-4)
TSCA Exemption/Exclusion
CAUTION: This material is supplied for research and development purposes subject to the R&D exemption under TSCA, 40 CFR 720.36, and must meet the requirements of the exemption, including supervision by a "technically qualified individual" as defined by 40 CFR 720.3(ee). The use of this material for "commercial purposes" as defined by 40 CFR 720.3(r) is not permitted in the United States.

1,2-Epoxy-5-hexene (10353-53-4)
Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations
CANADA
No additional information available

EU-Rules
1,2-Epoxy-5-hexene (10353-53-4)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations
1,2-Epoxy-5-hexene (10353-53-4)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

15.3. US State regulations
California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

SECTION 16: Other information

Full text of H-phrases:

<table>
<thead>
<tr>
<th>H225</th>
<th>Highly flammable liquid and vapor</th>
</tr>
</thead>
<tbody>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>H319</td>
<td>Causes serious eye irritation</td>
</tr>
</tbody>
</table>

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; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor.

Hazard Rating
Health : 2 Moderate Hazard - Temporary or minor injury may occur
Flammability : 4 Severe Hazard - Flammable gases, or very volatile flammable liquids with flash points below 73 F, and boiling points below 100 F. Materials may ignite spontaneously with air. (Class IA)
1,2-EPoxy-5-HEXENE
Safety Data Sheet

Physical: 1 Slight Hazard - Materials that are normally stable but can become unstable (self-react) at high temperatures and pressures. Materials may react non-violently with water or undergo hazardous polymerization in the absence of inhibitors.

Prepared by safety and environmental affairs.
Date of issue: 10/26/2015 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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