SECTION 1: Identification

1.1. Identification
- Product name: 2-ALLYLOXYETHANOL
- Product code: ENEA0200
- Product form: Substance
- Physical state: Liquid
- Formula: C5H10O2
- Synonyms: 2-(2-PROPENYLOXY)ETHANOL; ETHYLENE GLYCOL MONOALLYL ETHER; 2-ALLYLOXYETHYL ALCOHOL; ALLYL 2-HYDROXYETHYL ETHER
- Chemical family: POLYETHER

1.2. Recommended use and restrictions on use
- Recommended use: Chemical intermediate

1.3. Supplier
- 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: Hazard(s) identification

2.1. Classification of the substance or mixture
- GHS-US classification:
  - Flammable liquids Category 4
  - Skin corrosion/irritation Category 2
  - Serious eye damage/eye irritation Category 2A
  - Specific target organ toxicity (single exposure) Category 3
- Full text of H statements: see section 16

2.2. GHS Label elements, including precautionary statements
- GHS US labeling
- Hazard pictograms (GHS US):
- Signal word (GHS US): Warning
- Hazard statements (GHS US):
  - H227 - Combustible liquid
  - H315 - Causes skin irritation
  - H319 - Causes serious eye irritation
  - H335 - May cause respiratory irritation
- Precautionary statements (GHS US):
  - P280 - Wear protective gloves/protective clothing/eye protection/face protection.
  - P312 - Call a doctor if you feel unwell
  - P210 - Keep away from heat, open flames, sparks. - No smoking.
  - P261 - Avoid breathing vapors.
  - P264 - Wash hands thoroughly after handling.
  - P271 - Use only outdoors or in a well-ventilated area.
  - P302+P352 - If on skin: Wash with plenty of soap and water
  - P332+P313 - If skin irritation occurs: Get medical advice/attention.
  - P340+P341 - If inhaled: Remove person to fresh air and keep comfortable for breathing
  - P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
  - P337+P313 - If eye irritation persists: Get medical advice/attention.
  - P321 - Specific treatment (see first aid instructions on this label)
  - P362+P364 - Take off contaminated clothing and wash it before reuse.
  - P370+P378 - In case of fire: Use water spray or fog, foam, carbon dioxide, dry chemical to extinguish.
  - P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
  - P403+P235 - Keep in a cool place
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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: 2-ALLYLOXYETHANOL
CAS-No.: 111-45-5

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Alloxyethanol</td>
<td>(CAS-No.) 111-45-5</td>
<td>97 - 100</td>
<td>Flam. Liq. 4, H227, Eye Irrit. 2A, H319, Skin Irrit. 2, H315, STOT SE 3, H335</td>
</tr>
<tr>
<td>Allyl alcohol</td>
<td>(CAS-No.) 107-18-6</td>
<td>0 - 0.1</td>
<td>Flam. Liq. 2, H225, Acute Tox. 3 (Oral), H301, Acute Tox. 2 (Dermal), H310, Acute Tox. 1 (Inhalation: vapour), H330, Skin Irrit. 2, H315, Eye Irrit. 2A, H319, STOT SE 3, H335, Aquatic Acute 1, H400</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.
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 respiratory irritation. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.
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: None known.

5.2. Specific hazards arising from the chemical
Fire hazard: Combustible liquid. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.

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: Remove 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**

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: 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. Use only outdoors or in a well-ventilated area. 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**

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

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>Source</th>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>ACGIH TWA (ppm)</td>
<td>0.5 ppm</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>5 mg/m³</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (ppm)</td>
<td>2 ppm</td>
</tr>
<tr>
<td>IDLH</td>
<td>US IDLH (ppm)</td>
<td>20 ppm</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (mg/m³)</td>
<td>5 mg/m³</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (TWA) (ppm)</td>
<td>2 ppm</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (STEL) (mg/m³)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>NIOSH</td>
<td>NIOSH REL (STEL) (ppm)</td>
<td>4 ppm</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:**
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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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>102.13 g/mol</td>
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<tr>
<td>Color</td>
<td>Straw</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
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<tr>
<td>Refractive index</td>
<td>1.436</td>
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<tr>
<td>pH</td>
<td>No data available</td>
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<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
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<tr>
<td>Melting point</td>
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<tr>
<td>Flash point</td>
<td>&lt; -20 °C</td>
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<tr>
<td>Boiling point</td>
<td>159 °C</td>
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<tr>
<td>Auto-ignition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
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<tr>
<td>Flammability (solid, gas)</td>
<td>Combustible liquid</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>&lt; 1 mm Hg 20°C</td>
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<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
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<tr>
<td>Relative density</td>
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<tr>
<td>% Volatiles</td>
<td>&lt; 3 %</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</td>
<td>No data available</td>
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<tr>
<td>Viscosity, kinematic</td>
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<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
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<tr>
<td>Oxidizing properties</td>
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<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.
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SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Not classified

2-Alloxyethanol (111-45-5)
LD50 oral rat 3050 mg/kg
LD50 intraperitoneal mouse 250 mg/kg
ATE US (oral) 3050 mg/kg body weight

Allyl alcohol (107-18-6)
LD50 oral rat 64 mg/kg
LD50 oral mouse 96 mg/kg
LD50 dermal rabbit 89 mg/kg
LC50 inhalation rat (mg/l) 0.391 mg/l/4h
ATE US (oral) 64 mg/kg body weight
ATE US (dermal) 89 mg/kg body weight
ATE US (vapors) 0.391 mg/l/4h
ATE US (dust, mist) 0.391 mg/l/4h

Skin corrosion/irritation: Causes skin irritation.

Serious eye damage/irritation:
Skin Irritation - rabbit: 20 mg/24H: moderate irritation effect
Eye Irritation - rabbit: 250 ug/24H: severe irritation effect

Respiratory or skin sensitization: Not classified

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity – single exposure: May cause respiratory irritation.

Specific target organ toxicity – repeated exposure: Not classified

Aspiration hazard: Not classified

Symptoms/effects after inhalation: May cause respiratory irritation. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

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.

SECTION 12: Ecological information

12.1. Toxicity

Allyl alcohol (107-18-6)
LC50 fish 1 0.28 - 0.37 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
LC50 fish 2 0.32 mg/l (Exposure time: 96 h - Species: Pimephales promelas [static])

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Allyl alcohol (107-18-6)
BCF fish 1 (no bioaccumulation expected)
Log Pow 0.17

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.
### SECTION 14: Transport information

14.1. **UN number**
- DOT NA no.: NA1993

14.2. **UN proper shipping name**
- Transport document description: NA1993 Combustible liquid, n.o.s. (2-ALLYLOXYETHANOL), 3, III
- Proper Shipping Name (DOT): Combustible liquid, n.o.s. (2-ALLYLOXYETHANOL)
- Class (DOT): 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
- Packing group (DOT): III - Minor Danger
- DOT Packaging Non Bulk (49 CFR 173.xxx): 203
- DOT Packaging Bulk (49 CFR 173.xxx): 241
- DOT Packaging Exceptions (49 CFR 173.xxx): 150
- DOT Symbols: D - Proper shipping name for domestic use only, or to and from Canada, G - Identifies PSN requiring a technical name

14.3. **Additional information**
- Other information: This product is Combustible as defined by the US Department of Transportation (DOT). It is regulated for transport in the US in container > 119 gallons (450 liters). The product is not regulated for transport by the IATA, ADR/RID, ADNR or the IMDG regulations.

#### 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**

#### 2-Alloxyethanol (111-45-5)
- Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### Allyl alcohol (107-18-6)
- Listed on the United States TSCA (Toxic Substances Control Act) inventory
- Listed on the United States SARA Section 302
- Subject to reporting requirements of United States SARA Section 313
- SARA Section 302 Threshold Planning Quantity (TPQ): 1000
- SARA Section 313 - Emission Reporting: 1 %

15.2. **International regulations**

**CANADA**

#### 2-Alloxyethanol (111-45-5)
- Listed on the Canadian NDSL (Non-Domestic Substances List)

#### Allyl alcohol (107-18-6)
- Listed on the Canadian DSL (Domestic Substances List)

**EU-Regulations**

#### 2-Alloxyethanol (111-45-5)
- Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)
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**Allyl alcohol (107-18-6)**

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

**National regulations**

**2-Alloxyethanol (111-45-5)**

Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)

Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

**Allyl alcohol (107-18-6)**

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 Japanese ENCS (Existing & New Chemical Substances) inventory

Listed on the Korean ECL (Existing Chemicals List)

Listed on NZIoC (New Zealand Inventory of Chemicals)

Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

Japanese Poisonous and Deleterious Substances Control Law

Japanese Pollutant Release and Transfer Register Law (PRTR Law)

Listed on the Canadian IDL (Ingredient Disclosure List)

Listed on INSQ (Mexican National Inventory of Chemical Substances)

**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

**Allyl alcohol (107-18-6)**

U.S. - Massachusetts - Right To Know List

U.S. - New Jersey - Right to Know Hazardous Substance List

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

U.S. - Pennsylvania - RTK (Right to Know) List

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**SECTION 16: Other information**

Full text of H-phrases:

- **H225**: Highly flammable liquid and vapor
- **H227**: Combustible liquid
- **H301**: Toxic if swallowed
- **H310**: Fatal in contact with skin
- **H315**: Causes skin irritation
- **H319**: Causes serious eye irritation
- **H330**: Fatal if inhaled
- **H335**: May cause respiratory irritation
- **H400**: Very toxic to aquatic life

**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**: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
- **Flammability**: 2 Moderate Hazard - Materials which must be moderately heated or exposed to high ambient temperatures before ignition will occur. Includes liquids having a flash point at or above 100 F but below 200 F. (Classes II & IIIA)
- **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

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Prepared by safety and environmental affairs.

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