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

### 1.1. Product identifier

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Substance name</th>
<th>Product form</th>
<th>Physical state</th>
<th>Product code</th>
<th>Formula</th>
<th>Synonyms</th>
<th>Chemical family</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquid</td>
<td>METHALLYL CHLORIDE, tech-95</td>
<td>Substance</td>
<td>Liquid</td>
<td>ENEM2040</td>
<td>C4H7Cl</td>
<td>3-CHLORO-2-METHYLPROPENE; ISOBUTENYL CHLORIDE</td>
<td>ESTER</td>
</tr>
</tbody>
</table>

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

Use of the substance/mixture: Chemical intermediate
For research and industrial use only

### 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

<table>
<thead>
<tr>
<th>GHS-US classification</th>
<th>Hazard statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flam. Liq. 2</td>
<td>H225</td>
</tr>
<tr>
<td>Acute Tox. 4 (Oral)</td>
<td>H302</td>
</tr>
<tr>
<td>Acute Tox. 4 (Inhalation/vapour)</td>
<td>H332</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>H315</td>
</tr>
<tr>
<td>Eye Irrit. 2A</td>
<td>H319</td>
</tr>
<tr>
<td>Carc. 1B</td>
<td>H350</td>
</tr>
<tr>
<td>Aquatic Acute 2</td>
<td>H401</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

### 2.2. Label elements

#### GHS-US labeling

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Hazard pictograms" /></td>
<td>Danger</td>
<td>H225 - Highly flammable liquid and vapor</td>
<td>P201 - Obtain special instructions before use</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H302+H332 - Harmful if swallowed or if inhaled</td>
<td>P202 - Do not handle until all safety precautions have been read and understood</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H315 - Causes skin irritation</td>
<td>P308+P313 - If exposed or concerned: Get medical advice/attention</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H319 - Causes serious eye irritation</td>
<td>P210 - Keep away from heat, open flames, sparks. - No smoking</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H350 - May cause cancer</td>
<td>P233 - Keep container tightly closed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>H401 - Toxic to aquatic life</td>
<td>P240 - Ground/bond container and receiving equipment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P241 - Use explosion-proof electrical equipment</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P242 - Use only non-sparking tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P243 - Take precautionary measures against static discharge</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P261 - Avoid breathing vapors</td>
</tr>
</tbody>
</table>
METHALLYL CHLORIDE, tech-95
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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>Substance type</th>
<th>Name</th>
<th>CAS No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mono-constituent</td>
<td>METHALLYL CHLORIDE, tech-95</td>
<td>563-47-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methallyl chloride (CAS No 563-47-3)</td>
<td>98 - 100</td>
<td>Flam. Liq. 2, H225, Acute Tox. 4 (Oral), H302, Acute Tox. 4 (Inhalation), H332, Skin Irrit. 2, H315, Eye Irrit. 2A, H319, Carc. 1B, H350, Aquatic Acute 2, H401</td>
<td></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 : May cause cancer.
Symptoms/injuries after inhalation : Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled. Irritation to the nose, pulmonary edema.
Symptoms/injuries after skin contact : Causes skin irritation.
Symptoms/injuries after eye contact : Causes serious eye irritation.
Symptoms/injuries after ingestion : Swallowing a small quantity of this material will result in serious health hazard.

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

SECTION 5: Firefighting measures

5.1. Extinguishing media
METHALLYL CHLORIDE, tech-95
Safety Data Sheet

Unsuitable extinguishing media: Do not use straight streams.

5.2. Special hazards arising from the substance or mixture
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. 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. For further information refer to section 8: "Exposure controls/personal protection". Equip cleanup crew with proper protection.

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

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: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Avoid all eye and skin contact and do not breathe vapor and mist. Ground/bond container and receiving equipment. Take precautionary measures against static discharge. 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
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. Store locked up.
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

<table>
<thead>
<tr>
<th></th>
<th>ACGIH TWA (mg/m³)</th>
<th>USA OSHA OSHA PEL (TWA) (mg/m³)</th>
<th>USA OSHA OSHA PEL (TWA) (ppm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methallyl chloride (563-47-3)</td>
<td></td>
<td>3 mg/m³</td>
<td>3 mg/m³ 8H</td>
</tr>
<tr>
<td></td>
<td>ACGIH TWA (ppm)</td>
<td></td>
<td>1 ppm 8H</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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### 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. If exposure is less than 25ppm air supplied respirator operated in a continuous flow mode is recommended. If exposure exceeds 25ppm a self-contained breathing apparatus with a full facepiece is recommended. NIOSH-certified combination organic vapor/acid gas (yellow 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**: 90.55 g/mol

**Color**: Straw yellow.

**Odor**: sharp, characteristic.

**Odor threshold**: No data available

**Refractive index**: 1.427

**pH**: No data available

**Relative evaporation rate (butyl acetate=1)**: > 1

**Melting point**: No data available

**Freezing point**: -80 °C

**Boiling point**: 71 - 72 °C

**Flash point**: -10 °C

**Auto-ignition temperature**: 482 °C

**Decomposition temperature**: No data available

**Flammability (solid, gas)**: Highly flammable liquid and vapor

**Vapor pressure**: 102 mm Hg @ 20°C

**Relative vapor density at 20 °C**: 3.13

**Relative density**: 0.925

**VOC content**: 100 %

**Solubility**: Slightly. Soluble in water.

**Water**: 0.14 % @ 20°C

**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**: 2.3 - 9.2 vol % (lower; upper)

### 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

10.6. Hazardous decomposition products
Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity: Oral: Harmful if swallowed. Inhalation: vapour: Harmful if inhaled.

**METHALLYL CHLORIDE, tech-95 (563-47-3)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATE US (oral)</td>
<td>580.000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>11.000 mg/l/4h</td>
</tr>
</tbody>
</table>

**Methallyl chloride (563-47-3)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
<td>580 mg/kg 848 mg/kg</td>
</tr>
<tr>
<td>LD50 oral mouse</td>
<td>1370 mg/kg</td>
</tr>
<tr>
<td>LD50 dermal rat</td>
<td>&gt; 4000 mg/kg &gt;10,000 mg/kg</td>
</tr>
<tr>
<td>LC50 inhalation rat</td>
<td>&gt; 5000 mg/m^3 4H</td>
</tr>
<tr>
<td>ATE US (oral)</td>
<td>580.000 mg/kg body weight</td>
</tr>
<tr>
<td>ATE US (gases)</td>
<td>4500.000 ppmV/4h</td>
</tr>
<tr>
<td>ATE US (vapors)</td>
<td>11.000 mg/l/4h</td>
</tr>
<tr>
<td>ATE US (dust, mist)</td>
<td>1.500 mg/l/4h</td>
</tr>
</tbody>
</table>

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: May cause cancer.

Chronic Exposure: This product has been reported to be reasonably anticipated to be a human carcinogenic based on NTP. IARC, EPA and OSHA have not identified or classified this compound as a human carcinogen. Mouse feeding and inhalation studies classify this material as an equivocal tumorigenic agent.

**Methallyl chloride (563-47-3)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>IARC group</td>
<td>3 - Not classifiable</td>
</tr>
<tr>
<td>National Toxicology Program (NTP) Status</td>
<td>1 - Evidence of Carcinogenicity, 3 - Reasonably anticipated to be Human Carcinogen</td>
</tr>
</tbody>
</table>

Reproductive toxicity: Not classified
Specific target organ toxicity (single exposure): Not classified
Specific target organ toxicity (repeated exposure): Not classified
Aspiration hazard: Not classified
Potential Adverse human health effects and symptoms: Harmful if swallowed. Harmful if inhaled.
Symptoms/injuries after inhalation: Danger of serious damage to health by prolonged exposure through inhalation. Harmful if inhaled. Irritation to the nose, pulmonary edema.
Symptoms/injuries after skin contact: Causes skin irritation.
Symptoms/injuries after eye contact: Causes serious eye irritation.
Symptoms/injuries after ingestion: Swallowing a small quantity of this material will result in serious health hazard.
Reason for classification: Expert judgment

SECTION 12: Ecological information

12.1. Toxicity
Ecology - water: Toxic to aquatic life.

**Methallyl chloride (563-47-3)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
<td>22.5 mg/l Leuciscus idus (bluegill fish)</td>
</tr>
<tr>
<td>EC50 Daphnia 1</td>
<td>7.2 mg/l Daphnia magna (24H)</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential

**Methallyl chloride (563-47-3)**

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log Pow</td>
<td>1.98</td>
</tr>
</tbody>
</table>
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 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 : 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) : 2554
DOT NA no. : UN2554

14.2. UN proper shipping name
Proper Shipping Name (DOT) : Methyl allyl chloride
Transport hazard class(es) (DOT) : 3 - Class 3 - Flammable and combustible liquid 49 CFR 173.120
Hazard labels (DOT) : 3 - Flammable liquid

Packing group (DOT) : II - Medium Danger
DOT Packaging Exceptions (49 CFR 173.xxx) : 150
DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242

14.3. Additional information
Other information : No supplementary information available.

Transport by sea
DOT Vessel Stowage Location : E - 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, but is prohibited from carriage on passenger vessels in which the limiting number of passengers is exceeded.

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

SECTION 15: Regulatory information

15.1. US Federal regulations
Methallyl chloride (563-47-3)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
Subject to reporting requirements of United States SARA Section 313
SARA Section 313 - Emission Reporting : 0.1 %

15.2. International regulations
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Methallyl chloride (563-47-3)
Listed on the AICS (Australian Inventory of Chemical Substances)
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 NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on the Japanese Pollutant Release and Transfer Register Law (PRTR Law)
Listed on INSQ (Mexican national Inventory of Chemical Substances)

15.3. US State regulations

<table>
<thead>
<tr>
<th>METHALLYL CHLORIDE, tech-95(563-47-3)</th>
<th>(563-47-3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. - California - Proposition 65 - Carcinogens List</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Developmental Toxicity</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Female</td>
<td>No</td>
</tr>
<tr>
<td>U.S. - California - Proposition 65 - Reproductive Toxicity - Male</td>
<td>No</td>
</tr>
</tbody>
</table>

Methallyl chloride (563-47-3)
U.S. - California - Proposition 65 - Carcinogens List | U.S. - California - Proposition 65 - Developmental Toxicity | U.S. - California - Proposition 65 - Reproductive Toxicity - Female | U.S. - California - Proposition 65 - Reproductive Toxicity - Male | Non-significant risk level (NSRL)
---|---|---|---|---|
Yes | No | No | No | No

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:
- Acute Tox. 4 (Inhalation) Acute toxicity (inhalation) Category 4
- Acute Tox. 4 (Inhalation:vapour) Acute toxicity (inhalation:vapor) Category 4
- Acute Tox. 4 (Oral) Acute toxicity (oral) Category 4
- Aquatic Acute 2 Hazardous to the aquatic environment - Acute Hazard Category 2
- Carc. 1B Carcinogenicity Category 1B
- Eye Irrit. 2A Serious eye damage/eye irritation Category 2A
- Flam. Liq. 2 Flammable liquids Category 2
- Skin Irrit. 2 Skin corrosion/irritation Category 2
- H225 Highly flammable liquid and vapor
- H302 Harmful if swallowed
- H315 Causes skin irritation
- H319 Causes serious eye irritation
- H332 Harmful if inhaled
- H350 May cause cancer
- H401 Toxic to aquatic life

HMIS III Rating
Health: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability: 3 Serious Hazard
Physical: 0 Minimal Hazard

Prepared by safety and environmental affairs.

11/24/2015 EN (English US) SDS ID: ENEM2040 7/8
METHALLYL CHLORIDE, tech-95
Safety Data Sheet

Date of issue: 11/24/2015 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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