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

1.1. Product identifier

Product form: Substance
Physical state: Liquid
Substance name: DIETHYLGERMANE
Product code: GED3410
Formula: C4H12Ge
Synonyms: DIETHYLGERMANIUM HYDRIDE
Chemical family: ORGANOGERMANIUM

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

1.2.1. Relevant identified uses
Use of the substance/mixture: Chemical intermediate

1.2.2. Uses advised against
No additional information available

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

GELEST INC.
Fritz-Klatte-Strasse 8
65933 Frankfurt
Germany
T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM
info@gelestde.com - www.gelestde.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

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Flammable liquids, Category 2
Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects
No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]
Hazard pictograms (CLP):

GHS02

Signal word (CLP): Danger
Hazard statements (CLP): H225 - Highly flammable liquid and vapour.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233 - Keep container tightly closed.
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P240 - Ground/bond container and receiving equipment.
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

SECTION 3: Composition/information on ingredients

3.1. Substances

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification according to Regulation (EC) No. 1272/2008 [CLP]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diethylgermane</td>
<td>(CAS-No.) 1631-46-5</td>
<td>&gt; 95</td>
<td>Flam. Liq. 2, H225</td>
</tr>
<tr>
<td>Other Organogermaniums</td>
<td></td>
<td>&lt; 5</td>
<td>Not classified</td>
</tr>
</tbody>
</table>

Full text of 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 person to fresh air and keep comfortable for breathing. If you feel unwell, seek medical advice.

First-aid measures after skin contact: Wash with plenty of water/….

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/effects after inhalation: May cause irritation to the respiratory tract.
Symptoms/effects after skin contact: May cause skin irritation.
Symptoms/effects after eye contact: May cause eye irritation.
Symptoms/effects 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: Water.

5.2. Special hazards arising from the substance or mixture
Fire hazard: Highly flammable liquid and vapour. Irritating fumes and organic acid vapors may develop when material is exposed to elevated temperatures or open flame.
Explosion hazard: May form flammable/explosive vapour-air mixture.

5.3. Advice for firefighters
Firefighting instructions: Use water spray to cool exposed surfaces. Exercise caution when fighting any chemical fire.
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 vapour 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
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
Precautions for safe handling: Avoid all eye and skin contact and do not breathe vapour and mist. Provide good ventilation in process area to prevent formation of vapour. Containers must be properly grounded before beginning transfer. 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: Ground/bond container and receiving equipment. Proper grounding procedures to avoid static electricity should be followed. Use explosion-proof electrical equipment.
Storage conditions: Keep container tightly closed. Do not store at elevated temperature. Refrigeration is recommended.
Incompatible materials: Oxidizing agent.
Storage area: Store in a well-ventilated place. Store away from heat. Store in a cool area.

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
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Appearance: Clear liquid.
Molecular mass: 132.73 g/mol
Colour: Straw.
Odour: Mild.
Odour threshold: No data available
Refractive index: 1.4208
pH: No data available
Relative evaporation rate (butylacetate=1): > 1
Melting point: No data available
Freezing point: < 0 °C
Boiling point: 74 °C
Flash point: < 23 °C
Auto-ignition temperature: No data available
Decomposition temperature: No data available
Flammability (solid, gas): Highly flammable liquid and vapour.
Vapour pressure: No data available
Relative vapour density at 20 °C: > 1
Relative density: 1.039
% Volatiles: 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

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 at temperatures not exceeding 25°C for up to six months.

10.3. Possibility of hazardous reactions
Alkalai or base materials may cause the release of small quantities of hydrogen gas.

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

10.5. Incompatible materials
Oxidizing agent.

10.6. Hazardous decomposition products
Germanium oxides. Organic acid vapors.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity: Not classified
Skin corrosion/irritation: Not classified
Serious eye damage/irritation: Not classified
Respiratory or skin sensitisation: Not classified
Germ cell mutagenicity: Not classified
Carcinogenicity: Not classified
Reproductive toxicity: Not classified
STOT-single exposure: Not classified
STOT-repeated exposure: Not classified
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Aspiration hazard : Not classified
Symptoms/effects after inhalation : May cause irritation to the respiratory tract.
Symptoms/effects after skin contact : May cause skin irritation.
Symptoms/effects after eye contact : May cause eye irritation.
Symptoms/effects after ingestion : May be harmful if swallowed.

SECTION 12: Ecological information

12.1. Toxicity
Acute aquatic toxicity : Not classified
Chronic aquatic toxicity : Not classified

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. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Product/Packaging 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 vapours are flammable.
Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number
In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number
UN-No. (ADR) : 1993
UN-No. (IMDG) : 1993
UN-No. (IATA) : 1993
UN-No. (ADN) : 1993
UN-No. (RID) : 1993

14.2. UN proper shipping name
Proper Shipping Name (ADR) : FLAMMABLE LIQUID, N.O.S.
Proper Shipping Name (IMDG) : FLAMMABLE LIQUID, N.O.S.
Proper Shipping Name (IATA) : Flammable liquid, n.o.s.
Proper Shipping Name (ADN) : FLAMMABLE LIQUID, N.O.S.
Proper Shipping Name (RID) : FLAMMABLE LIQUID, N.O.S.
Transport document description (ADR) : UN 1993 FLAMMABLE LIQUID, N.O.S. (DIETHYLGERMANE), 3, II, (D/E)
Transport document description (IMDG) : UN 1993 FLAMMABLE LIQUID, N.O.S. (DIETHYLGERMANE), 3, II
Transport document description (IATA) : UN 1993 Flammable liquid, n.o.s. (DIETHYLGERMANE), 3, II
Transport document description (ADN) : UN 1993 FLAMMABLE LIQUID, N.O.S. (DIETHYLGERMANE), 3, II
Transport document description (RID) : UN 1993 FLAMMABLE LIQUID, N.O.S. (DIETHYLGERMANE), 3, II

14.3. Transport hazard class(es)
ADR
Transport hazard class(es) (ADR) : 3
Danger labels (ADR) : 3
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IMDG
Transport hazard class(es) (IMDG) : 3
Danger labels (IMDG) : 3

IATA
Transport hazard class(es) (IATA) : 3
Hazard labels (IATA) : 3

ADN
Transport hazard class(es) (ADN) : 3
Danger labels (ADN) : 3

RID
Transport hazard class(es) (RID) : 3
Danger labels (RID) : 3

14.4. Packing group
Packing group (ADR) : II
Packing group (IMDG) : II
Packing group (IATA) : II
Packing group (ADN) : II
Packing group (RID) : II

14.5. Environmental hazards
Dangerous for the environment : No
Marine pollutant : No
Other information : No supplementary information available

14.6. Special precautions for user

• Overland transport
Classification code (ADR) : F1
Special provisions (ADR) : 274, 601, 640C
## DIETHYLGERMANE
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<table>
<thead>
<tr>
<th>Limited quantities (ADR)</th>
<th>1L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excepted quantities (ADR)</td>
<td>E2</td>
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<td>Packing instructions (ADR)</td>
<td>P001</td>
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<tr>
<td>Mixed packing provisions (ADR)</td>
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<tr>
<td>Portable tank and bulk container instructions (ADR)</td>
<td>T7</td>
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<tr>
<td>Portable tank and bulk container special provisions (ADR)</td>
<td>TP1, TP8, TP28</td>
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<tr>
<td>Tank code (ADR)</td>
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<td>Transport category (ADR)</td>
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<tr>
<td>Special provisions for carriage - Operation (ADR)</td>
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<td>Hazard identification number (Kemler No.)</td>
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<tr>
<td>Orange plates</td>
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<tr>
<td>Tunnel restriction code (ADR)</td>
<td>D/E</td>
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</tbody>
</table>

### Transport by sea
- **Special provisions (IMDG)**: 274
- **Limited quantities (IMDG)**: 1 L
- **Excepted quantities (IMDG)**: E2
- **Packing instructions (IMDG)**: P001
- **IBC packing instructions (IMDG)**: IBC02
- **Tank instructions (IMDG)**: T7
- **Tank special provisions (IMDG)**: TP1, TP8, TP28
- **EmS-No. (Fire)**: F-E
- **EmS-No. (Spillage)**: S-E
- **Stowage category (IMDG)**: B

### Air transport
- **PCA Excepted quantities (IATA)**: E2
- **PCA Limited quantities (IATA)**: Y341
- **PCA limited quantity max net quantity (IATA)**: 1L
- **PCA packing instructions (IATA)**: 353
- **PCA max net quantity (IATA)**: 5L
- **CAO packing instructions (IATA)**: 364
- **CAO max net quantity (IATA)**: 60L
- **Special provisions (IATA)**: A3
- **ERG code (IATA)**: 3H

### Inland waterway transport
- **Classification code (ADN)**: F1
- **Special provisions (ADN)**: 274, 601, 640C
- **Limited quantities (ADN)**: 1 L
- **Excepted quantities (ADN)**: E2
- **Carriage permitted (ADN)**: T
- **Equipment required (ADN)**: PP, EX, A
- **Ventilation (ADN)**: VE01
- **Number of blue cones/lights (ADN)**: 1

### Rail transport
- **Classification code (RID)**: F1
- **Special provisions (RID)**: 274, 601, 640C
- **Limited quantities (RID)**: 1L
- **Excepted quantities (RID)**: E2
- **Packing instructions (RID)**: P001
- **Mixed packing provisions (RID)**: MP19
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Portable tank and bulk container instructions (RID):
- T7
Portable tank and bulk container special provisions (RID):
- TP1, TP8, TP28
Tank codes for RID tanks (RID):
- L1.5BN
Transport category (RID):
- 2
Colis express (express parcels) (RID):
- CE7
Hazard identification number (RID):
- 33

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations
No REACH Annex XVII restrictions
DIETHYLGERMANE is not on the REACH Candidate List
DIETHYLGERMANE is not on the REACH Annex XIV List
DIETHYLGERMANE is not subject to REGULATION (EU) No 649/2012 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 4 July 2012 concerning the export and import of hazardous chemicals.

% Volatiles: 100 %

15.1.2. National regulations

Germany
12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV: Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands
SZW-list van kankerverwekkende stoffen: The substance is not listed
SZW-list van mutagene stoffen: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vuchtbaarheid: The substance is not listed
NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling: The substance is not listed

Denmark
Class for fire hazard: Class II-1
Store unit: 5 liter
Classification remarks: R10 <H225>; Emergency management guidelines for the storage of flammable liquids must be followed

15.2. Chemical safety assessment

No additional information available

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 Ind 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

Other information: Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:
Flam. Liq. 2: Flammable liquids, Category 2
H225: Highly flammable liquid and vapour.
The information contained in this document has been gathered from reference materials and/or Gelest, Inc. test data and is to the best knowledge and belief of Gelest, Inc. accurate and reliable. Such information is offered solely for your consideration, investigation and verification. It is not suggested or guaranteed that the hazard precautions or procedures described are the only ones which exist. Gelest, Inc. makes no warranties, express or implied, with respect to the use of such information and assumes no responsibility therefore. Information on this safety data sheet is not intended to constitute a basis for product specifications.

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