SAFETY DATA SHEET

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

1.1 Product identifiers

Product name: Dimethyl ether

Product Number: 295299
Brand: Aldrich
Index-No.: 603-019-00-8
CAS-No.: 115-10-6

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

Identified uses: Laboratory chemicals, Synthesis of substances

1.3 Details of the supplier of the safety data sheet

Company: Sigma-Aldrich Inc.
3050 SPRUCE ST
ST. LOUIS MO  63103
UNITED STATES

Telephone: +1 314 771-5765
Fax: +1 800 325-5052

1.4 Emergency telephone

Emergency Phone #: 800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)

Flammable gases (Category 1), H220
Gases under pressure (Liquefied gas), H280
Simple Asphyxiant,

For the full text of the H-Statements mentioned in this Section, see Section 16.

2.2 GHS Label elements, including precautionary statements

Pictogram

Signal Word

Danger

Aldrich - 295299
Hazard statement(s)
H220  Extremely flammable gas.
H280  Contains gas under pressure; may explode if heated.
       May displace oxygen and cause rapid suffocation.

Precautionary statement(s)
P210   Keep away from heat/ sparks/ open flames/ hot surfaces. No
       smoking.
P377   Leaking gas fire: Do not extinguish, unless leak can be stopped
       safely.
P381   Eliminate all ignition sources if safe to do so.
P410 + P403 Protect from sunlight. Store in a well-ventilated place.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS
May displace oxygen and cause rapid suffocation.

SECTION 3: Composition/information on ingredients

3.1 Substances
Synonyms: Methyl ether

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl ether</td>
<td>Flam. Gas 1; Press. Gas Liquefied gas; SA ; H220, H280,</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>

For the full text of the H-Statements mentioned in this Section, see Section 16.

SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air.

In case of skin contact
In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.

In case of eye contact
After eye contact: rinse out with plenty of water. Remove contact lenses.
If swallowed
After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.

4.2 Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

4.3 Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5: Firefighting measures

5.1 Extinguishing media

 Suitable extinguishing media
Carbon dioxide (CO2) Foam Dry powder

 Unsuitable extinguishing media
For this substance/mixture no limitations of extinguishing agents are given.

5.2 Special hazards arising from the substance or mixture
Carbon oxides
Combustible.
Pay attention to flashback.
Vapors are heavier than air and may spread along floors.
Development of hazardous combustion gases or vapours possible in the event of fire.

5.3 Advice for firefighters
In the event of fire, wear self-contained breathing apparatus.

5.4 Further information
Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Advice for non-emergency personnel: Do not breathe gas. Avoid substance contact.
Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.
For personal protection see section 8.

6.2 Environmental precautions
Do not let product enter drains.

6.3 Methods and materials for containment and cleaning up
Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Stop flow of gas, move leaking cylinder to open air if without risk.

6.4 Reference to other sections
For disposal see section 13.
SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition.

Hygiene measures
Change contaminated clothing. Wash hands after working with substance.
For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Storage conditions
Tightly closed. Keep away from combustible materials and sources of ignition.
Contents under pressure.

Storage class
Storage class (TRGS 510): 2A: Gases

7.3 Specific end use(s)
Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl ether</td>
<td>115-10-6</td>
<td>TWA</td>
<td>1,000 ppm</td>
<td>USA. Workplace Environmental Exposure Levels (WEEL)</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

Appropriate engineering controls
Change contaminated clothing. Wash hands after working with substance.

Personal protective equipment

Eye/face protection
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

Skin protection
This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: www.kcl.de).
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.4 mm
Break through time: 10 min
Material tested: Camatril® (KCL 730 / Aldrich Z677442, Size M)

**Body Protection**
Flame retardant antistatic protective clothing.

**Respiratory protection**
Recommended Filter type: Filter type ABEK
The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented. Required when vapours/mists are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

**Control of environmental exposure**
Do not let product enter drains.

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**SECTION 9: Physical and chemical properties**

**9.1 Information on basic physical and chemical properties**

a) **Appearance**
Form: Liquefied gas

b) **Odor**
No data available

c) **Odor Threshold**
No data available

d) **pH**
No data available

e) **Melting point/freezing point**
Melting point/range: -141 °C (-222 °F) - lit.

f) **Initial boiling point and boiling range**
-24.8 °C -12.6 °F - lit.

g) **Flash point**
-41 °C (-42 °F) - closed cup

h) **Evaporation rate**
No data available

i) **Flammability (solid, gas)**
No data available

j) **Upper/lower flammability or explosive limits**
Upper explosion limit: 27 % (V)
Lower explosion limit: 3.4 % (V)

k) **Vapor pressure**
5,333 hPa at 20 °C (68 °F)

l) **Vapor density**
1.59 (Air = 1.0)

m) **Density**
0.661 g/cm³ at 20 °C (68 °F)

Relative density
No data available

n) **Water solubility**
353 g/l at 24 °C (75 °F) at 1,013 hPa

o) **Partition coefficient:**
No data available

p) **Autoignition**
226 °C (439 °F) at 1,013 - 1,027 hPa
9.2 Other safety information

Relative vapor density 1.59 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
No data available

10.2 Chemical stability
The product is chemically stable under standard ambient conditions (room temperature).

10.3 Possibility of hazardous reactions
Violent reactions possible with:
Strong oxidizing agents
Hydrogen halides
Fluorine
Nitrogen dioxide
Hydrides
Chlorine

10.4 Conditions to avoid
no information available

10.5 Incompatible materials
various plastics

10.6 Hazardous decomposition products
In the event of fire: see section 5

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity
Oral: No data available
LC50 Inhalation - Rat - male - 4 h - 164000 ppm - vapor

Behavioral: General anesthetic.
Behavioral: Coma.
Dermal: No data available
No data available

**Skin corrosion/irritation**
Remarks: No data available

**Serious eye damage/eye irritation**
Remarks: No data available

**Respiratory or skin sensitization**
No data available

**Germ cell mutagenicity**
Test Type: Ames test
Test system: S. typhimurium
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative
Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Result: negative

Species: Drosophila melanogaster

Application Route: inhalation (gas)
Method: OECD Test Guideline 477
Result: negative

**Carcinogenicity**
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.

**Reproductive toxicity**
No data available

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
No data available

**Aspiration hazard**
No data available

**11.2 Additional Information**
RTECS: PM4780000
Blurred vision, Headache, Dizziness, Convulsions, Asphyxia, Unconsciousness, Liver disorders
SECTION 12: Ecological information

12.1 Toxicity

Toxicity to fish  
semi-static test LC50 - Poecilia reticulata (guppy) - > 4.1 g/l - 96 h

Toxicity to daphnia and other aquatic invertebrates  
static test EC50 - Daphnia magna (Water flea) - > 4.4 g/l - 48 h

Toxicity to bacteria  
Respiration inhibition EC10 - Pseudomonas putida - ca. > 1,600 mg/l - 30 min

12.2 Persistence and degradability

Biodegradability  
aerobic  - Exposure time 28 d  
Result: 5 % - Not readily biodegradable.  
(OECD Test Guideline 301D)

12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

12.6 Endocrine disrupting properties

No data available

12.7 Other adverse effects

No data available

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. Pressurised gas bottle: dispose of only in empty condition!

SECTION 14: Transport information

DOT (US)

UN number: 1033  Class: 2.1
Proper shipping name: Dimethyl ether

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Page 8 of 10
Reportable Quantity (RQ): Poison Inhalation Hazard: No

**IMDG**
UN number: 1033  Class: 2.1          EMS-No: F-D, S-U
Proper shipping name: DIMETHYL ETHER

**IATA**
UN number: 1033  Class: 2.1
Proper shipping name: Dimethyl ether
IATA Passenger: Not permitted for transport

### SECTION 15: Regulatory information

**SARA 302 Components**
This material does not contain any components with a section 302 EHS TPQ.

**SARA 313 Components**
This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 311/312 Hazards**
Fire Hazard, Sudden Release of Pressure Hazard

#### Massachusetts Right To Know Components

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#### Pennsylvania Right To Know Components

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### SECTION 16: Other information

**Further information**
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See www.sigma-aldrich.com and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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