SAFETY DATA SHEET

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

1.1 Product identifiers

Product name : Methan(ol-d)
Product Number : 550574
Brand : Aldrich
CAS-No. : 1455-13-6

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 liquids (Category 2), H225
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 3), H331
Acute toxicity, Dermal (Category 3), H311
Specific target organ toxicity - single exposure (Category 1), H370

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
Hazard statement(s)
- **H225**: Highly flammable liquid and vapor.
- **H301 + H311 + H331**: Toxic if swallowed, in contact with skin or if inhaled.
- **H370**: Causes damage to organs.

Precautionary statement(s)
- **P210**: Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
- **P233**: Keep container tightly closed.
- **P240**: Ground/bond container and receiving equipment.
- **P241**: Use explosion-proof electrical/ ventilating/ lighting/ equipment.
- **P242**: Use only non-sparking tools.
- **P243**: Take precautionary measures against static discharge.
- **P260**: Do not breathe mist or vapors.
- **P264**: Wash skin thoroughly after handling.
- **P270**: Do not eat, drink or smoke when using this product.
- **P271**: Use only outdoors or in a well-ventilated area.
- **P280**: Wear protective gloves/ eye protection/ face protection.
- **P301 + P310 + P330**: IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.
- **P303 + P361 + P353**: IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
- **P304 + P340 + P311**: IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.
- **P307 + P311**: IF exposed: Call a POISON CENTER or doctor/ physician.
- **P362**: Take off contaminated clothing and wash before reuse.
- **P370 + P378**: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
- **P403 + P233**: Store in a well-ventilated place. Keep container tightly closed.
- **P403 + P235**: Store in a well-ventilated place. Keep cool.
- **P405**: Store locked up.
- **P501**: Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

**SECTION 3: Composition/information on ingredients**

#### 3.1 Substances

- **Synonym**: Methyl alcohol-OD
- **Synonym**: mono-Deuteromethanol

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>methanol-d₁</td>
<td>Flam. Liq. 2; Acute Tox. 3; STOT SE 1; H225, H301, H331, H311, H370</td>
<td>&lt;= 100 %</td>
</tr>
</tbody>
</table>
SECTION 4: First aid measures

4.1 Description of first-aid measures

General advice
First aiders need to protect themselves. Show this material safety data sheet to the doctor in attendance.

If inhaled
After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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

In case of eye contact
After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

If swallowed
If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

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
Water Foam Carbon dioxide (CO2) 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.
Forms explosive mixtures with air at ambient temperatures.

5.3 Advice for firefighters
Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.
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 vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. 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. Risk of explosion.

6.3 Methods and materials for containment and cleaning up
Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

6.4 Reference to other sections
For disposal see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Advice on safe handling
Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Hygiene measures
Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities
Storage conditions
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons.

hygroscopic Handle and store under inert gas.

Storage class
Storage class (TRGS 510): 3: Flammable liquids

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>methanol-d₁</td>
<td>1455-13-6</td>
<td>TWA 200 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 250 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
<td>Danger of cutaneous absorption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST 250 ppm 325 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
<td>Potential for dermal absorption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 200 ppm 260 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
<td>Potential for dermal absorption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 200 ppm 260 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
<td>Potential for dermal absorption</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL 200 ppm 260 mg/m³</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>C 1,000 ppm</td>
<td>California permissible exposure limits for chemical contaminants (Title 8, Article 107)</td>
<td></td>
</tr>
</tbody>
</table>

**Biological occupational exposure limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Parameters</th>
<th>Value</th>
<th>Biological specimen</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>methanol-d₁</td>
<td>1455-13-6</td>
<td>Methanol</td>
<td>15 mg/l</td>
<td>Urine</td>
<td>ACGIH - Biological Exposure Indices (BEI)</td>
</tr>
</tbody>
</table>

**Remarks** End of shift (As soon as possible after exposure ceases)

#### 8.2 Exposure controls

**Appropriate engineering controls**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face 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**
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Full contact
Material: butyl-rubber
Minimum layer thickness: 0.3 mm
Break through time: 480 min
Material tested:Butoject® (KCL 897 / Aldrich Z677647, Size M)

Splash contact
Material: Chloroprene
Minimum layer thickness: 0.6 mm
Break through time: 30 min
Material tested:Camapren® (KCL 722 / Aldrich Z677493, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the EC approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

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

**Respiratory protection**
required when vapours/aerosols 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. Risk of explosion.

---

**SECTION 9: Physical and chemical properties**

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

a) Appearance
   Form: liquid

b) Odor
   No data available

c) Odor Threshold
   No data available

d) pH
   No data available

e) Melting point/freezing point
   Melting point/range: -98.0 °C (-144.4 °F)
f) Initial boiling point and boiling range: 65.5 °C (149.9 °F) - lit.
g) Flash point: 11.0 °C (51.8 °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: 36 % (V)
   Lower explosion limit: 6 % (V)
k) Vapor pressure:
   546.6 hPa at 50.0 °C (122.0 °F)
   130.3 hPa at 20.0 °C (68.0 °F)
l) Vapor density: No data available
m) Density: 0.813 g/mL at 25 °C (77 °F) - lit.
   Relative density: No data available
n) Water solubility: completely miscible
o) Partition coefficient: n-octanol/water
   log Pow: -0.77
p) Autoignition temperature: No data available
q) Decomposition temperature: No data available
r) Viscosity: No data available
s) Explosive properties: No data available
t) Oxidizing properties: none

9.2 Other safety information
No data available

SECTION 10: Stability and reactivity

10.1 Reactivity
Vapors may form explosive mixture with air.

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

10.3 Possibility of hazardous reactions
Risk of explosion with:
   Oxidizing agents
   perchloric acid
   perchlorates
   salts of oxyhalogenic acids
   chromium(VI) oxide
   halogen oxides
   nitrogen oxides
   nonmetallic oxides
   chromosulfuric acid
chlorates  
hydrides  
zinc diethyl  
halogens  
hydrogen peroxide  
Nitric acid  
powdered magnesium  
Sulphuric acid  
permanganic acid  
sodium hypochlorite  
Exothermic reaction with:  
acid halides  
Acid anhydrides  
Reducing agents  
acids  
Bromine  
Chlorine  
Chloroform  
magnesium  
tetrachloromethane  
Generates dangerous gases or fumes in contact with:  
Alkaline earth metals  
Alkali metals  
Risk of ignition or formation of inflammable gases or vapours with:  
Fluorine  
Raney-nickel  
Oxides of phosphorus  

10.4 **Conditions to avoid**  
Heat, flames and sparks.  
Warming.  

10.5 **Incompatible materials**  
various plastics, magnesium, zinc alloys  

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**  
Acute toxicity estimate Oral - 100.1 mg/kg  
(Expert judgment)  
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)  
The value is given in analogy to the following substances: Methanol  
Symptoms: Nausea, Vomiting  
Acute toxicity estimate Inhalation - 4 h - 3.1 mg/l - vapor  
(Expert judgment)  
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)  
The value is given in analogy to the following substances: Methanol  
Symptoms: Irritation symptoms in the respiratory tract.
Acute toxicity estimate Dermal - 300.1 mg/kg
(Expert judgment)
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
The value is given in analogy to the following substances: Methanol

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation
Remarks: (ECHA)
The value is given in analogy to the following substances: Methanol
Remarks: Drying-out effect resulting in rough and chapped skin.

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation
Remarks: (ECHA)
The value is given in analogy to the following substances: Methanol

**Respiratory or skin sensitization**
Sensitisation test: - Guinea pig
Result: negative
(OECD Test Guideline 406)
Remarks: The value is given in analogy to the following substances: Methanol

**Germ cell mutagenicity**
Based on available data the classification criteria are not met.
Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Remarks: The value is given in analogy to the following substances: Methanol

Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster lung cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
Remarks: The value is given in analogy to the following substances: Methanol

Test Type: Micronucleus test
Species: Mouse
Cell type: Bone marrow
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474
Result: negative
Remarks: The value is given in analogy to the following substances: Methanol

**Carcinogenicity**
Did not show carcinogenic effects in animal experiments.

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**
Based on available data the classification criteria are not met.

**Specific target organ toxicity - single exposure**
Causes damage to organs. - Eyes, Central nervous system
Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)
The value is given in analogy to the following substances: Methanol

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

**Aspiration hazard**
No data available

### 11.2 Additional Information

Acute effects: Headache, Dizziness, Drowsiness, narcosis, Blindness, Impairment of vision, irritant effects, Nausea, Vomiting, agitation, spasms, inebriation, Coma
Drying-out effect resulting in rough and chapped skin.
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Systemic effects:
- acidosis
- drop in blood pressure
- agitation, spasms
- inebriation
- Dizziness
- Drowsiness
- Headache
- Impairment of vision
- Blindness
- narcosis
- Coma

Symptoms may be delayed.

Damage to:
- Liver
- Kidney
- Cardiac
- Irreversible damage of the optical nerve.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Central nervous system - Breathing difficulties - Based on Human Evidence

---

**SECTION 12: Ecological information**

**12.1 Toxicity**

Toxicity to fish flow-through test LC50 - Lepomis macrochirus (Bluegill) - 15,400.0
The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the US and Canada

mg/l - 96 h (US-EPA)
Remarks: The value is given in analogy to the following substances: Methanol

Toxicity to daphnia and other aquatic invertebrates
semi-static test EC50 - Daphnia magna (Water flea) - 18,260 mg/l - 96 h (OECD Test Guideline 202)
Remarks: The value is given in analogy to the following substances: Methanol

Toxicity to algae
static test ErC50 - Pseudokirchneriella subcapitata (green algae) - ca. 22,000.0 mg/l - 96 h (OECD Test Guideline 201)
Remarks: The value is given in analogy to the following substances: Methanol

Toxicity to bacteria
static test IC50 - activated sludge - > 1,000 mg/l - 3 h (OECD Test Guideline 209)
Remarks: The value is given in analogy to the following substances: Methanol

Toxicity to fish (Chronic toxicity)
NOEC - Oryzias latipes (Orange-red killifish) - 7,900 mg/l - 200 h
Remarks: (External MSDS)
The value is given in analogy to the following substances: Methanol

12.2 Persistence and degradability
Biodegradability
Result: 99 % - Readily biodegradable.
(OECD Test Guideline 301D)
Remarks: The value is given in analogy to the following substances: Methanol

Biochemical Oxygen Demand (BOD) 600 - 1,120 mg/g
Remarks: (IUCLID)

Chemical Oxygen Demand (COD) 1,420 mg/g
Remarks: (IUCLID)

Theoretical oxygen demand 1,500 mg/g
Remarks: (Lit.)

Ratio BOD/ThBOD 76 %
Remarks: Closed Bottle test (IUCLID)

12.3 Bioaccumulative potential
Bioaccumulation
Cyprinus carpio (Carp) - 72 d at 20 °C - 5 mg/l(methanol-d₁)

Bioconcentration factor (BCF): 1.0
Remarks: The value is given in analogy to the following substances: Methanol
12.4 **Mobility in soil**  
Will not adsorb on soil.

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**  
Additional ecological information: Avoid release to the environment.

Stability in water: at 19 °C83 - 91 % - 72 h  
Remarks: Hydrolyzes on contact with water. Hydrolyzes readily. - 2.2 yr  
Remarks: reaction with hydroxyl radicals(IUCLID)

**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.

**SECTION 14: Transport information**

**DOT (US)**  
UN number: 1230  
Class: 3  
Packing group: II  
Proper shipping name: Methanol  
Reportable Quantity (RQ): 5000 lbs  
Reportable Quantity (RQ): 100 lbs  
Poison Inhalation Hazard: No

**IMDG**  
UN number: 1230  
Class: 3 (6.1)  
Packing group: II  
EMS-No: F-E, S-D  
Proper shipping name: METHANOL

**IATA**  
UN number: 1230  
Class: 3 (6.1)  
Packing group: II  
Proper shipping name: Methanol

**SECTION 15: Regulatory information**

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

**SARA 313 Components**  
The following components are subject to reporting levels established by SARA Title III, Section 313:
SARA 311/312 Hazards
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Reportable Quantity  F003 lbs

Massachusetts Right To Know Components
methanol-d₁ CAS-No. 1455-13-6 Revision Date 2007-07-01

Pennsylvania Right To Know Components
methanol-d₁ CAS-No. 1455-13-6 Revision Date 2007-07-01

California Prop. 65 Components
methanol-d₁, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
methanol-d₁ CAS-No. 1455-13-6 Revision Date 2012-03-16

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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Details in analogy to the undeuterated compound.
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