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

1.1 Product identifiers

Product name : Dimethyl Sulfoxide
Product Number : 317275
Brand : Millipore
CAS-No. : 67-68-5

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

Identified uses : Reagent for development and research

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 4), H227

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

2.2 GHS Label elements, including precautionary statements

Pictogram : none
Signal Word : Warning
Hazard statement(s) : Combustible liquid.
Precautionary statement(s)

P210  Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P280  Wear protective gloves/ eye protection/ face protection.
P370 + P378  In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
P403 + P235  Store in a well-ventilated place. Keep cool.
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

<table>
<thead>
<tr>
<th>Formula</th>
<th>C2H6OS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molecular weight</td>
<td>78.13 g/mol</td>
</tr>
<tr>
<td>CAS-No.</td>
<td>67-68-5</td>
</tr>
<tr>
<td>EC-No.</td>
<td>200-664-3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Classification</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>dimethyl sulphoxide</td>
<td>Flam. Liq. 4; H227</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

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
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
Sulfur oxides
Combustible.
Fire may cause evolution of:
Sulfur oxides
Vapors are heavier than air and may spread along floors.
Forms explosive mixtures with air on intense heating.
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. Suppress (knock down) gases/vapors/mists with a water spray jet. 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. 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.

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

**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.

Recommended storage temperature see product label.

#### Storage class
Storage class (TRGS 510): 10: Combustible 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>dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>TWA</td>
<td>250 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).

   - Full contact
   - Material: Chloroprene
   - Minimum layer thickness: 0.65 mm
   - Break through time: 480 min
   - Material tested: KCL 720 Camapren®

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...
接触CE认证的手套供应商（例如，KCL GmbH，D-36124 Eichenzell，
Internet：www.kcl.de）。

接触面
材料：Latex手套
最小层厚度：0.6 mm

穿透时间：240 min
材料测试：Lapren®（KCL 706 / Aldrich Z677558，Size M）

呼吸保护

推荐的过滤器类型：Filter A（根据DIN 3181）用于有机化合物蒸气

企业家必须确保维护、清洁和测试呼吸防护设备

在蒸气/气溶胶产生的情况下有必要。我们的呼吸防护过滤器

的推荐是基于以下标准：DIN EN 143，DIN 14387

和其他相关的标准，根据使用的呼吸防护系统。

控制环境暴露

不要让产品进入下水道。

第9节：物理和化学性质

9.1 基本物理和化学性质

a) 外观 形状：液体

颜色：无色

b) 气味 无味

c) 气味阈值 无数据

d) pH 不适用

e) 熔点/凝固点 熔点：18.5 °C（65.3 °F）1,013 hPa

f) 初沸点及沸程

189 °C 372 °F 1,013 hPa

g) 闪点 87 °C（189 °F）- 封闭杯 - ASTM D 93

h) 蒸发性 无数据

i) 燃烧性（固体，气体） 无数据

j) 上下限爆炸或

爆炸极限 上限爆炸极限：28.5 %（V）

下限爆炸极限：2.6 %（V）

k) 蒸气压

0.55 hPa at 20 °C（68 °F）

l) 蒸气密度 2.70 - (Air = 1.0)

m) 密度 1.1 g/cm3 at 20 °C（68 °F）

相对密度 无数据
n) Water solubility completely miscible
o) Partition coefficient: log Pow: -1.35 at 20 °C (68 °F) - Bioaccumulation is not expected.
p) Autoignition temperature 300 - 302 °C (572 - 576 °F) at 1,013 hPa
q) Decomposition temperature > 190 °C (> 374 °F) -
r) Viscosity No data available
s) Explosive properties No data available
t) Oxidizing properties none

9.2 Other safety information
   Surface tension 43.5 mN/m at 20 °C (68 °F)
   Dissociation constant 35.1
   Relative vapor density 2.70 - (Air = 1.0)

SECTION 10: Stability and reactivity

10.1 Reactivity
   Forms explosive mixtures with air on intense heating.
   A range from approx. 15 Kelvin below the flash point is to be rated as critical.

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:
   acetylidene
   organic halides
   perchlorates
   Acid chlorides
   nonmetallic halides
   iron(III) compounds
   nitrates
   fluorides
   chlorates
   hydrides
   perchloric acid
   Oxides of phosphorus
   Nitric acid
   silver compounds
   silicon compounds
   silanes
   acid halides
   Exothermic reaction with:
boron compounds
oxyhalogenic compounds
Potassium
sodium
Strong oxidizing agents
phosphorus halides
strong reducing agents
Acid chlorides
Strong acids
silver salt
nitrogen dioxide
Risk of ignition or formation of inflammable gases or vapours with:
potassium permanganate

10.4 **Conditions to avoid**
Strong heating.

10.5 **Incompatible materials**
No data available

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

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**SECTION 11: Toxicological information**

11.1 **Information on toxicological effects**

**Acute toxicity**
LD50 Oral - Rat - male and female - 28,300 mg/kg
(OECD Test Guideline 401)
LC0 Inhalation - Rat - male and female - 4 h - > 5.33 mg/l - dust/mist

(OECD Test Guideline 403)
LD50 Dermal - Rat - male and female - 40,000 mg/kg

Remarks: (ECHA)

**Skin corrosion/irritation**
Skin - Rabbit
Result: slight irritation - 4 h
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: slight irritation - 24 h
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)
Local lymph node assay (LLNA) - Mouse
Result: negative
(OECD Test Guideline 429)

**Germ cell mutagenicity**

Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
Test Type: sister chromatid exchange assay
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 479
Result: negative
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Rat
Application Route: Intraperitoneal
Method: OECD Test Guideline 474
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**

Repeated dose toxicity - Rat - male and female - Oral - 18 Months - NOAEL (No observed adverse effect level) - 3,300 mg/kg - LOAEL (Lowest observed adverse effect level) - 9,900 mg/kg
Repeated dose toxicity - Monkey - male and female - Dermal - 18 Months - NOAEL (No observed adverse effect level) - >= 8,910 mg/kg - LOAEL (Lowest observed adverse effect level) - 990 mg/kg

Exposure to large amounts can cause: redness of skin, itching, burning, sedation, headache, nausea, dizziness
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Eyes - Eye disease - Based on Human Evidence

SECTION 12: Ecological information

12.1 Toxicity
Toxicity to fish
static test LC50 - Danio rerio (zebra fish) - > 25,000 mg/l - 96 h (OECD Test Guideline 203)

Toxicity to daphnia and other aquatic invertebrates
static test EC50 - Daphnia magna (Water flea) - 24,600 mg/l - 48 h (OECD Test Guideline 202)

Toxicity to algae
static test ErC50 - Pseudokirchneriella subcapitata (green algae) - 17,000 mg/l - 72 h (OECD Test Guideline 201)

Toxicity to bacteria
EC50 - activated sludge - 10 - 100 mg/l - 30 min (ISO 8192)

12.2 Persistence and degradability
Biodegradability
aerobic - Exposure time 28 d
Result: 31% - 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
Stability in water
- 0.12 - 1.2 h at 30 °C pH 7
Remarks: Hydrolyzes readily.
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)
NA-Number: 1993   Class: NONE   Packing group: III
Proper shipping name: Combustible liquid, n.o.s. (dimethyl sulphoxide)
Reportable Quantity (RQ):
   Poison Inhalation Hazard: No

IMDG
Not dangerous goods

IATA
Not dangerous goods

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.

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

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