

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Dimethyl sulfoxide

Product Number : 276855  
Brand : Sigma-Aldrich

Supplier : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832  
Fax : +1 800-325-5052  
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

### 2. HAZARDS IDENTIFICATION

#### Emergency Overview

##### OSHA Hazards

Combustible Liquid, Target Organ Effect

##### Target Organs

Eyes, Skin

##### GHS Classification

Flammable liquids (Category 4)

##### GHS Label elements, including precautionary statements

Pictogram : none

Signal word : Warning

Hazard statement(s)  
H227 : Combustible liquid

Precautionary statement(s) : none

##### HMIS Classification

Health hazard: 0  
Chronic Health Hazard: \*  
Flammability: 2  
Physical hazards: 0

##### NFPA Rating

Health hazard: 0  
Fire: 2  
Reactivity Hazard: 0

##### Potential Health Effects

**Inhalation** : May be harmful if inhaled. May cause respiratory tract irritation.  
**Skin** : May be harmful if absorbed through skin. May cause skin irritation.

**Eyes** May cause eye irritation.  
**Ingestion** May be harmful if swallowed.  
**Aggravated Medical Condition** Avoid contact with DMSO solutions containing toxic materials or materials with unknown toxicological properties. Dimethyl sulfoxide is readily absorbed through skin and may carry such materials into the body.,

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### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms : DMSO  
Methyl sulfoxide

Formula : C<sub>2</sub>H<sub>6</sub>OS  
Molecular Weight : 78.13 g/mol

| Component                 |           | Concentration |
|---------------------------|-----------|---------------|
| <b>Dimethyl sulfoxide</b> |           |               |
| CAS-No.                   | 67-68-5   | <=100%        |
| EC-No.                    | 200-664-3 |               |

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### 4. FIRST AID MEASURES

#### General advice

Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

#### If inhaled

If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

#### In case of skin contact

Wash off with soap and plenty of water. Consult a physician.

#### In case of eye contact

Flush eyes with water as a precaution.

#### If swallowed

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

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### 5. FIREFIGHTING MEASURES

#### Suitable extinguishing media

For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

#### Special protective equipment for firefighters

Wear self contained breathing apparatus for fire fighting if necessary.

#### Hazardous combustion products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides

#### Further information

Use water spray to cool unopened containers.

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### 6. ACCIDENTAL RELEASE MEASURES

#### Personal precautions

Avoid breathing vapours, mist or gas. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

#### Environmental precautions

Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

#### Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). Keep in suitable, closed containers for disposal.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid inhalation of vapour or mist.

Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

### Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Store under inert gas. hygroscopic

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

| Components         | CAS-No. | Value | Control parameters | Basis   |
|--------------------|---------|-------|--------------------|---|
| Dimethyl sulfoxide | 67-68-5 | TWA   | 250 ppm            | USA. Workplace Environmental Exposure Levels (WEEL) |

### Personal protective equipment

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Hand 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.

#### Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.2 mm

Break through time: 38 min

Material tested: Dermatril® P (KCL 743 / Aldrich Z677388, 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 CE 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.

#### Eye protection

Safety glasses with side-shields conforming to EN166 Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin and body protection

impervious clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form liquid, clear

Colour colourless

### Safety data

pH no data available

|  |  |
|--|--|
| Melting point/freezing point           | Melting point/range: 16 - 19 °C (61 - 66 °F) |
| Boiling point                          | 189 °C (372 °F)                              |
| Flash point                            | 87 °C (189 °F) - closed cup                  |
| Ignition temperature                   | 301 °C (574 °F)                              |
| Auto-ignition temperature              | no data available                            |
| Lower explosion limit                  | 3.5 %(V)                                     |
| Upper explosion limit                  | 42 %(V)                                      |
| Vapour pressure                        | 0.55 hPa (0.41 mmHg) at 20 °C (68 °F)        |
| Density                                | 1.1 g/mL                                     |
| Water solubility                       | completely miscible                          |
| Partition coefficient: n-octanol/water | log Pow: -2.03                               |
| Relative vapour density                | 2.70<br>- (Air = 1.0)                        |
| Odour                                  | no data available                            |
| Odour Threshold                        | no data available                            |
| Evaporation rate                       | no data available                            |

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## 10. STABILITY AND REACTIVITY

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

no data available

### Conditions to avoid

Heat, flames and sparks.

### Materials to avoid

Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents, Strong reducing agents

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides, Sulphur oxides  
Other decomposition products - no data available

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## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Oral LD50

LD50 Oral - rat - 14,500 mg/kg

#### Inhalation LC50

LC50 Inhalation - rat - 4 h - 40250 ppm

#### Dermal LD50

LD50 Dermal - rabbit - > 5,000 mg/kg

#### Other information on acute toxicity

no data available

### Skin corrosion/irritation

no data available

### Serious eye damage/eye irritation

no data available

### **Respiratory or skin sensitisation**

no data available

### **Germ cell mutagenicity**

no data available

Genotoxicity in vitro - mouse - lymphocyte

Cytogenetic analysis

Genotoxicity in vitro - mouse - lymphocyte

Mutation in mammalian somatic cells.

Genotoxicity in vivo - rat - Intraperitoneal

Cytogenetic analysis

Genotoxicity in vivo - mouse - Intraperitoneal

DNA damage

### **Carcinogenicity**

Carcinogenicity - rat - Oral

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.

Carcinogenicity - mouse - Oral

Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Leukaemia Skin and Appendages: Other: Tumors.

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

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component 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 identified as a carcinogen or potential carcinogen by OSHA.

### **Reproductive toxicity**

Reproductive toxicity - rat - Intraperitoneal

Effects on Fertility: Abortion.

Reproductive toxicity - rat - Intraperitoneal

Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).

Reproductive toxicity - rat - Subcutaneous

Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).

Reproductive toxicity - mouse - Oral

Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

no data available

### **Teratogenicity**

Developmental Toxicity - mouse - Intraperitoneal

Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

no data available

### **Specific target organ toxicity - single exposure (Globally Harmonized System)**

no data available

### **Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

**Aspiration hazard**

no data available

**Potential health effects**

|                                     |   |
|-------------------------------------|---|
| <b>Inhalation</b>                   | May be harmful if inhaled. May cause respiratory tract irritation.  |
| <b>Ingestion</b>                    | May be harmful if swallowed.  |
| <b>Skin</b>                         | May be harmful if absorbed through skin. May cause skin irritation.   |
| <b>Eyes</b>                         | May cause eye irritation.   |
| <b>Aggravated Medical Condition</b> | Avoid contact with DMSO solutions containing toxic materials or materials with unknown toxicological properties. Dimethyl sulfoxide is readily absorbed through skin and may carry such materials into the body., |

**Signs and Symptoms of Exposure**

Effects due to ingestion may include:, Nausea, Fatigue, Headache

**Synergistic effects**

no data available

**Additional Information**

RTECS: PV6210000

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**12. ECOLOGICAL INFORMATION****Toxicity**

|   |   |
|---|---|
| Toxicity to fish                                    | LC50 - Pimephales promelas (fathead minnow) - 34,000 mg/l - 96 h<br>LC50 - Oncorhynchus mykiss (rainbow trout) - 35,000 mg/l - 96 h |
| Toxicity to daphnia and other aquatic invertebrates | EC50 - Daphnia pulex (Water flea) - 27,500 mg/l   |

**Persistence and degradability**

no data available

**Bioaccumulative potential**

no data available

**Mobility in soil**

no data available

**PBT and vPvB assessment**

no data available

**Other adverse effects**

no data available

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**13. DISPOSAL CONSIDERATIONS****Product**

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company.

**Contaminated packaging**

Dispose of as unused product.

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**14. TRANSPORT INFORMATION****DOT (US)**

NA-Number: 1993 Class: CBL Packing group: III  
Proper shipping name: Combustible liquid, n.o.s. (Dimethyl sulfoxide) (Dimethyl sulfoxide)  
Marine pollutant: No  
Poison Inhalation Hazard: No

**IMDG**

Not dangerous goods

**IATA**

Not dangerous goods

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**15. REGULATORY INFORMATION****OSHA Hazards**

Combustible Liquid, Target Organ Effect

**SARA 302 Components**

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313 Components**

SARA 313: 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, Chronic Health Hazard

**Massachusetts Right To Know Components**

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

**Pennsylvania Right To Know Components**

Dimethyl sulfoxide

CAS-No.  
67-68-5Revision Date  
2007-03-01**New Jersey Right To Know Components**

Dimethyl sulfoxide

CAS-No.  
67-68-5Revision Date  
2007-03-01**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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**16. OTHER INFORMATION****Further information**

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