

# SAFETY DATA SHEET

## 1. Identification

**Product Name** Dimethyl sulfoxide

**Cat No. :** D139-1; D139-RS19; NC1115865

**CAS No** 67-68-5

**Synonyms** Methyl sulfoxide; DMSO

**Recommended Use** Laboratory chemicals.

**Uses advised against** Food, drug, pesticide or biocidal product use.

## 2. Hazard(s) identification

### **Classification**

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids Category 4

### **Label Elements**

#### **Signal Word**

Warning

#### **Hazard Statements**

Combustible liquid

#### **Precautionary Statements**

##### **Prevention**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking

##### **Fire**

In case of fire: Use CO2, dry chemical, or foam for extinction

##### **Storage**

Store in a well-ventilated place. Keep cool

##### **Disposal**

Dispose of contents/container to an approved waste disposal plant

##### **Hazards not otherwise classified (HNOC)**

None identified

##### **Other hazards**

DMSO readily penetrates skin and may carry other dissolved chemicals into the body.

## 3. Composition/Information on Ingredients

Component	CAS No	Weight %
Dimethyl sulfoxide	67-68-5	<=100

#### 4. First-aid measures

**General Advice** If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance.

**Eye Contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Skin Contact** Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

**Inhalation** Remove to fresh air. Get medical attention immediately if symptoms occur. If not breathing, give artificial respiration.

**Ingestion** Do NOT induce vomiting. Get medical attention.

**Most important symptoms and effects** Difficulty in breathing. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

**Notes to Physician** Treat symptomatically

#### 5. Fire-fighting measures

**Suitable Extinguishing Media** Water spray, carbon dioxide (CO<sub>2</sub>), dry chemical, alcohol-resistant foam. Water mist maybe used to cool closed containers.

**Unsuitable Extinguishing Media** No information available

**Flash Point** 87 °C / 188.6 °F

**Method** - No information available

**Autoignition Temperature** 301 °C / 573.8 °F

##### Explosion Limits

**Upper** 42 vol %

**Lower** 2.6 vol %

**Sensitivity to Mechanical Impact** No information available

**Sensitivity to Static Discharge** No information available

##### Specific Hazards Arising from the Chemical

Combustible material. Containers may explode when heated. Thermal decomposition can lead to release of irritating gases and vapors.

##### Hazardous Combustion Products

Carbon monoxide (CO). Carbon dioxide (CO<sub>2</sub>). Sulfur oxides. Sulfides. Formaldehyde.

##### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

##### NFPA

Health

Flammability

Instability

Physical hazards

2 \*

2

1

N/A

## 6. Accidental release measures

**Personal Precautions** Use personal protective equipment as required. Remove all sources of ignition. Take precautionary measures against static discharges. Ensure adequate ventilation.

**Environmental Precautions** Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional Ecological Information.

**Methods for Containment and Clean Up**

Remove all sources of ignition. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.

## 7. Handling and storage

**Handling** Wear personal protective equipment/face protection. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation.

**Storage.** Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat, sparks and flame. Incompatible Materials. Strong oxidizing agents. Strong acids.

Strong bases. Alkali metals.

## 8. Exposure controls / personal protection

**Exposure Guidelines** This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

**Engineering Measures** Ensure adequate ventilation, especially in confined areas. Ensure that eyewash stations and safety

showers are close to the workstation location.

### **Personal Protective Equipment**

**Eye/face Protection** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin and body protection** Wear appropriate protective gloves and clothing to prevent skin exposure.

**Respiratory Protection** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

**Recommended Filter type:** Particle filter.

Handle in accordance with good industrial hygiene and safety practice.

### **Hygiene Measures**

## 9. Physical and chemical properties

**Physical State** Liquid

**Appearance** Colorless

**Odor** Odorless

**Odor Threshold** No information available **pH** No information available **Melting Point/Range** 18.4 °C / 65.1 °F

**Boiling Point/Range** 189 °C / 372.2 °F **Flash Point** 87 °C / 188.6 °F **Evaporation Rate** No information available

**Flammability (solid,gas)** Not applicable

**Flammability or explosive limits**

**Upper** 42 vol % **Lower** 2.6 vol % **Vapor Pressure** 0.55 mbar @ 20°C **Vapor Density** 2.7

**Specific Gravity** 1.100

**Solubility** Soluble in water

**Partition coefficient; n-octanol/water** No data available **Autoignition Temperature** 301 °C / 573.8 °F

**Decomposition Temperature** > 190°C

**Viscosity** 1.98 mPa.s @ 25°C **Molecular Formula** C<sub>2</sub> H<sub>6</sub> O S

**Molecular Weight** 78.13

## 10. Stability and reactivity

**Reactive Hazard** None known, based on information available **Stability** Hygroscopic.

**Conditions to Avoid** Incompatible products. Excess heat. Exposure to moist air or water. Keep away from open flames, hot surfaces and sources of ignition.

**Incompatible Materials** Strong oxidizing agents, Strong acids, Strong bases, Alkali metals **Hazardous Decomposition**

**Products** Carbon monoxide (CO), Carbon dioxide (CO<sub>2</sub>), Sulfur oxides, Sulfides, Formaldehyde **Hazardous Polymerization**

Hazardous polymerization does not occur.

**Hazardous Reactions** Thermal decomposition can take place above 189°C / 372°F.

## 11. Toxicological information

### Acute Toxicity

#### Product Information

#### Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Dimethyl sulfoxide	LD50 = 28300 mg/kg ( Rat )	LD50 = 40000 mg/kg ( Rat )	LC50 > 5.33 mg/L ( Rat ) 4 h

No information available

### Toxicologically Synergistic

#### Products

**Delayed and immediate effects as well as chronic effects from short and long-term exposure** Irritation No information

available

**Sensitization** No information available

**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Component	CAS No	IARC	NT	ACGIH	OSI	Mexico
Dimethyl sulfoxide	67-68-5	Not listed	Not listed	Not listed	Not listed	Not listed

**Mutagenic Effects** No information available

**Reproductive Effects** No information available.

**Developmental Effects** No information available.

**Teratogenicity** No information available.

**STOT - single exposure** None known

**STOT - repeated exposure** None known

**Aspiration hazard** No information available

Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

**Symptoms / effects, both acute and delayed**

**Endocrine Disruptor Information** No information available

**Other Adverse Effects** The toxicological properties have not been fully investigated.

## 12. Ecological information

### Ecotoxicity

Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants. Do not empty into drains. .

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Dimethyl sulfoxide	EC50 96h 12350 - 25500 mg/L	40 g/L LC50 96 h 33-37 g/L LC50 96 h	= 16000 mg/L EC50 Pseudomonas putida 16 h = 32 g/L EC50 Tetrahymenapyrifomis 24 h = 77 mg/L EC50 Photobacterium phosphoreum 5 min	EC50 24h 7000 mg/L

**Persistence and Degradability** Persistence is unlikely

**Bioaccumulation/ Accumulation** No information available.

**Mobility** . Will likely be mobile in the environment due to its water solubility.

Component	log Pow
Dimethyl sulfoxide	-1.35

## 13. Disposal considerations

**Waste Disposal Methods** Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

**14. Transport information**

**DOT** COMBUSTIBLE LIQUID, NOT REGULATED FOR TRANSPORT IN THIS QUANTITY According to 49 CFR §173.150(f)(1), this material should be reclassified as NA1993, Combustible Liquid, NOS if it is shipped in bulk.

**UN-No** NA1993

**Proper Shipping Name** Combustible liquid, n.o.s.

**Packing Group** III

**TDG** Not regulated

**IATA** Not regulated

**IMDG/IMO** Not regulated

**15. Regulatory information**

**United States of America Inventory**

Component	CAS No	TSCA	TSCA Inventory notification - Active-Inactive	TSCA - EPA Regulatory Flags
Dimethyl sulfoxide	67-68-5	X	ACTIVE	-

**Legend:**

**TSCA** US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

Not applicable

**TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)**

**TSCA 12(b)** - Notices of Export Not applicable

**International Inventories**

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

Component	CAS No	DSL	NDSL	EINECS	P	E	AIC	IECSC	KECL
Dimethyl sulfoxide	67-68-5	X	200-664-					XKE-32367	

**KECL** - NIER number or KE number (<http://ncis.nier.go.kr/en/main.do>)

**U.S. Federal Regulations**

**SARA 313** Not applicable

**SARA 311/312 Hazard Categories** See section 2 for more information

**CWA (Clean Water Act)** Not applicable

**Clean Air Act** Not applicable

Not applicable

**OSHA** - Occupational Safety and Health Administration

**CERCLA** Not applicable

**California Proposition 65** This product does not contain any Proposition 65 chemicals.

**U.S. State Right-to-Know Regulations**

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Dimethyl sulfoxide	-	X	-	-	-

**U.S. Department of Transportation**

Reportable Quantity (RQ): N

DOT Marine Pollutant N

DOT Severe Marine Pollutant N

This product does not contain any DHS chemicals.

**U.S. Department of Homeland Security**

**Other International Regulations**

**Mexico - Grade** Slight risk, Grade 1

**Authorisation/Restrictions according to EU REACH**

Component	CAS No	REACH (1907/2006) Annex XIV - Substances Subject to Authorization	REACH (1907/2006) -Annex XVII - Restrictions on Certain  Substances	REACH Regulation (EC1907/2006) article 59 - Candidate List of Substances of Very High Concern (SVHC)
Dimethyl sulfoxide	67-68-5	-	Use restricted. See item75. (see link for restrictiondetails)	-

**REACH links**

<https://echa.europa.eu/substances-restricted-under-reach>

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

Component	CAS No	OECD HPV	Persistent Organic Pollutant	Ozone Depletion Potential	Restriction of Hazardous Substances (RoHS)
Dimethyl sulfoxide	67-68-5	Listed	Not applicable	Not applicable	Not applicable

Contains component(s) that meet a 'definition' of per & poly fluoroalkyl substance (PFAS)? Not applicable

**Other International Regulations**

Component	CAS No	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Major Accident Notification	Seveso III Directive (2012/18/EC) - Qualifying Quantities for Safety Report Requirements	Rotterdam Convention (PIC)	Basel Convention (Hazardous Waste)
Dimethyl sulfoxide	67-68-5	Not applicable	Not applicable	Not applicable	Not applicable