

SAFETY DATA SHEET

Creation Date 23-Jan-2009

Revision Date 23-Jul-2021

Revision Number 3

1. Identification

Product Name Dimethyl sulfoxide

Cat No. : 43998

CAS No 67-68-5
Synonyms Dimethyl sulfoxide; DMSO

Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

Details of the supplier of the safety data sheet

Company

Alfa Aesar
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Emergency Telephone Number

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660.
After normal business hours, call Carechem 24 at (866) 928-0789.

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 | >95 |

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 (CO2), dry chemical, alcohol-resistant foam. Water mist may be 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 (CO₂). 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
2 *

Flammability
2

Instability
1

Physical hazards
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.

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 a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

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 ₂ H ₆ 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 ₂), 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 |

Toxicologically Synergistic Products No information available

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 | NTP | ACGIH | OSHA | 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 / effects, both acute and delayed Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

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 Tetrahymena pyriformis 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 | -2.03 |

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 CRF §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 - Toxic Substances Control Act, (40 CFR Part 710)

X - Listed

'-' - Not Listed

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 | PICCS | ENCS | ISHL | AICS | IECSC | KECL |
|--------------------|---------|-----|------|-----------|-------|------|------|------|-------|----------|
| Dimethyl sulfoxide | 67-68-5 | X | - | 200-664-3 | X | X | X | X | X | KE-32367 |

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

OSHA - Occupational Safety and Health Administration Not applicable

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

U.S. Department of Homeland Security This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade Slight risk, Grade 1

16. Other information

| | |
|-------------------------|---|
| Prepared By | Health, Safety and Environmental Department Email: tech@alfa.com www.alfa.com |
| Creation Date | 23-Jan-2009 |
| Revision Date | 23-Jul-2021 |
| Print Date | 23-Jul-2021 |
| Revision Summary | SDS authoring systems update, replaces ChemGes SDS No. 67-68-5. |

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text

End of SDS