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.

Details of the supplier of the safety data sheet

Company: Fisher Scientific Company
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number:
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>&gt;95</td>
</tr>
</tbody>
</table>

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...
Dimethyl sulfoxide

Hazardous Combustion Products

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.

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.

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

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless</td>
</tr>
</tbody>
</table>
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 (CO₂), 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

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>LD50 = 28300 mg/kg (Rat)</td>
<td>LD50 = 40000 mg/kg (Rat)</td>
<td>LC50 &gt; 5.33 mg/L (Rat) 4 h</td>
</tr>
</tbody>
</table>

Toxicologically Synergistic Products
No information available

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

Irritation
No information available

Sensitization
No information available

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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects
No information available
Dimethyl sulfoxide

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.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>EC50 96h 12350 - 25500 mg/L</td>
<td>40 g/L LC50 96 h 33-37 g/L LC50 96 h</td>
<td>= 16000 mg/L EC50 Pseudomonas putida 16 h = 32 g/L EC50 Tetrahymena pyriformis 24 h = 77 mg/L EC50 Photobacterium phosphoreum 5 min</td>
<td>EC50 24h 7000 mg/L</td>
</tr>
</tbody>
</table>

Persistence and Degradability  Persistence is unlikely
Bioaccumulation/ Accumulation  No information available.
Mobility  Will likely be mobile in the environment due to its water solubility.

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>-2.03</td>
</tr>
</tbody>
</table>

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 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
Dimethyl sulfoxide

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>TSCA</th>
<th>TSCA Inventory notification - Active-Inactive</th>
<th>TSCA - EPA Regulatory Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>X</td>
<td>ACTIVE</td>
<td></td>
</tr>
</tbody>
</table>

Legend:
TSCA US EPA (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).

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>PICCS</th>
<th>ENCS</th>
<th>ISHL</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>X</td>
<td>-</td>
<td>200-664-3</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>KE-32367</td>
</tr>
</tbody>
</table>

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
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

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

Authorisation/Restrictions according to EU REACH

<table>
<thead>
<tr>
<th>Component</th>
<th>REACH (1907/2006) - Annex XIV - Substances Subject to Restrictions on Certain Dangerous</th>
<th>REACH Regulation (EC 1907/2006) article 59 - Candidate</th>
</tr>
</thead>
</table>
Dimethyl sulfoxide

<table>
<thead>
<tr>
<th>Authorization</th>
<th>Substances</th>
<th>List of Substances of Very High Concern (SVHC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>-</td>
<td>Use restricted. See item 75. (see link for restriction details)</td>
</tr>
</tbody>
</table>


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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>OECD HPV</th>
<th>Persistent Organic Pollutant</th>
<th>Ozone Depletion Potential</th>
<th>Restriction of Hazardous Substances (RoHS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>Listed</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th></th>
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<td>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
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16. Other information

Prepared By: Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date: 23-Jan-2009
Revision Date: 24-Dec-2021
Print Date: 24-Dec-2021
Revision Summary: This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

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