SAFETY DATA SHEET

1. Identification

Product Name
Dimethyl sulfoxide

Cat No.: BP231-1; BP231-4; BP231-100; D128-1; D128-4; D128-500; D128-500LC; D128-POP19; D128-POP50; D128-POP200; D128-POPB200; D136-1; D137-1; D137RS-19; D137RS-200; D159-4; BP2620-100; S67496

Synonyms
Methyl sulfoxide; DMSO (HPLC/Spectranalyzed/Certified ACS)

Recommended Use
Laboratory chemicals.

Uses advised against
Not for 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
Dimethyl sulfoxide

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. Obtain medical attention.

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

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

**Ingestion**
Do not induce vomiting. Obtain medical attention.

**Most important symptoms/effects**
Breathing difficulties. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting

**Notes to Physician**
Treat symptomatically

5. Fire-fighting measures

**Suitable Extinguishing Media**
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

**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
6. Accidental release measures

<table>
<thead>
<tr>
<th>Personal Precautions</th>
<th>Use personal protective equipment. Remove all sources of ignition. Take precautionary measures against static discharges. Ensure adequate ventilation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Precautions</td>
<td>Should not be released into the environment. Do not flush into surface water or sanitary sewer system. See Section 12 for additional ecological information.</td>
</tr>
<tr>
<td>Methods for Containment and Clean Up</td>
<td>Remove all sources of ignition. Soak up with inert absorbent material. Keep in suitable, closed containers for disposal.</td>
</tr>
</tbody>
</table>

7. Handling and storage

| Handling | Wear personal protective equipment. Ensure adequate ventilation. Keep away from open flames, hot surfaces and sources of ignition. Avoid contact with skin, eyes and clothing. Avoid ingestion and inhalation. |
| Storage | Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. |

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

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper</td>
<td>42 vol %</td>
</tr>
<tr>
<td>Lower</td>
<td>2.6 vol %</td>
</tr>
</tbody>
</table>

### 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

- **C₂H₆OＳ**

### 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

### 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

#### Component Information

<table>
<thead>
<tr>
<th>Component</th>
<th>LD₅₀ Oral (mg/kg)</th>
<th>LD₅₀ Dermal (g/kg)</th>
<th>LC₅₀ Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>LD₅₀ = 14500</td>
<td>LD₅₀ = 40</td>
<td>Not listed</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

- **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

#### Reproductive Effects

- No information available.

#### Developmental Effects

- No information available.

#### Teratogenicity

- No information available.

#### STOT - single exposure

- None known
Dimethyl sulfoxide

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</td>
<td>= 16000 mg/L EC50 Pseudomonas putida 16 h</td>
<td>EC50 24h 7000 mg/L</td>
</tr>
<tr>
<td></td>
<td></td>
<td>33-37 g/L LC50 96 h</td>
<td>32 g/L EC50 Tetrahymena pyriformis 24 h</td>
<td></td>
</tr>
</tbody>
</table>

Persistence and Degradability
Soluble in water. Persistence is unlikely based on information available.

Bioaccumulation / Accumulation
No information available.

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

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
Not regulated

TDG
Not regulated

IATA
Not regulated

IMDG/IMO
Not regulated

15. Regulatory information

All of the components in the product are on the following Inventory lists: X = listed

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>200-664-3</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
Dimethyl sulfoxide

S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable
SARA 313 Not applicable

SARA 311/312 Hazard Categories
Acute Health Hazard No
Chronic Health Hazard Yes
Fire Hazard Yes
Sudden Release of Pressure Hazard No
Reactive Hazard No

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

16. Other information

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

Creation Date 23-Jan-2009
Revision Date 22-May-2017
Print Date 22-May-2017
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