SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form: Substance
Trade name: Dimethyl sulfoxide
EC-No.: 200-664-3
CAS-No.: 67-68-5
REACH registration No: 01-2119431362-50-XXXX
Product code: D1370
Formula: C2H6OS
Synonyms: DMSO, Methylsulfoxide
Product group: Raw material

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Main use category: Professional use
Industrial/Professional use spec: For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Supplier
Duchefa Biochemie B.V.
A. Hofmanweg 71
2031 BH Haarlem - The Netherlands
T +31(0)23-5319093 - F +31(0)23-5318027
info@duchefa.nl

1.4. Emergency telephone number

Emergency number: Supplier contact information:
+31(0)23-5319093 (M-F 09:00-17:00)
+31(0)6-30109355 (outside office hours)

<table>
<thead>
<tr>
<th>Organisation/Company</th>
<th>Address</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>World Health Organization world directory of poison centres</td>
<td><a href="http://apps.who.int/poisoncentres/">http://apps.who.int/poisoncentres/</a></td>
<td>Consult website for a local poison centre</td>
</tr>
</tbody>
</table>

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Not classified

Adverse physicochemical, human health and environmental effects
No additional information available
2.2. Label elements
Labelling according to Regulation (EC) No. 1272/2008 [CLP]

No labelling applicable

2.3. Other hazards
No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances
Name: Dimethyl sulfoxide
CAS-No.: 67-68-5
EC-No.: 200-664-3

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide</td>
<td>(CAS-No.) 67-68-5</td>
<td>&gt;= 99,9</td>
</tr>
<tr>
<td></td>
<td>(EC-No.) 200-664-3</td>
<td></td>
</tr>
</tbody>
</table>

Full text of H-statements: see section 16

3.2. Mixtures
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Assure fresh air breathing
Get medical advice/attention.

First-aid measures after skin contact: Wash skin with mild soap and water
Seek medical attention if ill effect or irritation develops.

First-aid measures after eye contact: Rinse immediately with plenty of water
Seek medical advice.

First-aid measures after ingestion: Rinse mouth
Seek medical attention if ill effect develops.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after eye contact: Tears. Redness of the eye tissue.

Symptoms/effects after ingestion: Ingestion may cause nausea, vomiting and diarrhea.

4.3. Indication of any immediate medical attention and special treatment needed

Laxative: sodium sulfate. Give water to drink if victim completely conscious/alert.

SECTION 5: Firefighting measures

5.1. Extinguishing media
Suitable extinguishing media: Water spray
Dry chemical powder, alcohol-resistant foam, carbon dioxide (CO2).

5.2. Special hazards arising from the substance or mixture
Hazardous decomposition products in case of fire: When exposed to heat, may decompose liberating hazardous gases - SOx.
5.3. Advice for firefighters
Precautionary measures fire: Do not enter fire area without proper protective equipment, including respiratory protection.

Firefighting instructions: Use water spray or fog for cooling exposed containers.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
General measures: Avoid breathing dust, mist or spray.

6.1.1. For non-emergency personnel
No additional information available

6.1.2. For emergency responders
No additional information available

6.2. Environmental precautions
Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up
Methods for cleaning up: Rinse with plenty of water. Dike for recovery or absorb with appropriate material.

6.4. Reference to other sections
No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Precautions for safe handling: Neoprene protective gloves. Keep container closed when not in use. Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for safe storage, including any incompatibilities
Storage conditions: Store in dry, well-ventilated area
Store at room temperature.

7.3. Specific end use(s)
For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters
Additional information: Provide local exhaust or general room ventilation

8.2. Exposure controls

Hand protection:

<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>Permeation</th>
<th>Thickness (mm)</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gloves</td>
<td>Neoprene rubber (HNBR)</td>
<td>6 (&gt; 480 minutes)</td>
<td>0,65</td>
<td>EN 374</td>
</tr>
</tbody>
</table>

Eye protection:
Safety glasses

Skin and body protection:
If skin contact or contamination of clothing is likely, protective clothing should be worn. Avoid repeated or prolonged skin contact.

**Respiratory protection:**
In case of inadequate ventilation wear respiratory protection. Filter type P1 (EN 143)

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>Liquid.</td>
</tr>
<tr>
<td>Molecular mass</td>
<td>78,1 g/mol</td>
</tr>
<tr>
<td>Colour</td>
<td>Colourless.</td>
</tr>
<tr>
<td>Odour</td>
<td>Characteristic.</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative evaporation rate (butylacetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point</td>
<td>18,5 (18 - 20) °C</td>
</tr>
<tr>
<td>Freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>189 °C at 1.013 hPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>87 °C</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>270 °C</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>&gt; 190 °C</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>0,6 hPa at 20 °C</td>
</tr>
<tr>
<td>Relative vapour density at 20 °C</td>
<td>2,7</td>
</tr>
<tr>
<td>Relative density</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>1099 - 1101 g/l at 20 °C</td>
</tr>
<tr>
<td>Solubility</td>
<td>Water: 1000 g/l at 20 °C</td>
</tr>
<tr>
<td>Log Pow</td>
<td>-1,35</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, dynamic</td>
<td>2,14 mPa.s at 20 °C</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidising properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosive limits</td>
<td>1,8 vol % Lower explosion limit</td>
</tr>
<tr>
<td></td>
<td>63 vol % Upper explosion limit</td>
</tr>
</tbody>
</table>

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

Attacks metals

Product can attack some forms of plastics.

#### 10.2. Chemical stability

No additional information available
10.3. Possibility of hazardous reactions
Stable under normal conditions.

10.4. Conditions to avoid
Overheating
Moisture.

10.5. Incompatible materials
Alkali
Strong oxidizers
Acids
Sulfur.

10.6. Hazardous decomposition products
When heated to decomposition, emits dangerous fumes:
- SOx.

SECTION 11: Toxicological information

11.1. Information on toxicological effects
Acute toxicity : May be harmful if swallowed.

<table>
<thead>
<tr>
<th>Dimethyl sulfoxide (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 oral rat</td>
</tr>
<tr>
<td>LD50 dermal rat</td>
</tr>
<tr>
<td>LC50 inhalation rat (mg/l)</td>
</tr>
</tbody>
</table>

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Not classified
Respiratory or skin sensitisation : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified
Reproductive toxicity : Not classified
STOT-single exposure : Not classified
STOT-repeated exposure : Not classified
Aspiration hazard : May cause irritation to the respiratory tract
Other information : RTECS no. PV6210000.

SECTION 12: Ecological information

12.1. Toxicity

<table>
<thead>
<tr>
<th>Dimethyl sulfoxide (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50 fish 1</td>
</tr>
<tr>
<td>LC50 fish 2</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Dimethyl sulfoxide (67-68-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradation</td>
</tr>
</tbody>
</table>
12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Dimethyl sulfoxide (67-68-5)</th>
<th>Log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-1.35</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil
No additional information available

12.5. Results of PBT and vPvB assessment
No additional information available

12.6. Other adverse effects
Additional information: Prevent entry to sewers and public waters

SECTION 13: Disposal considerations

13.1. Waste treatment methods
Waste treatment methods: Dispose of this material and its container to hazardous or special waste collection point. Dispose in a safe manner in accordance with local/national regulations.

SECTION 14: Transport information

In accordance with ADR / IATA / IMDG

<table>
<thead>
<tr>
<th>ADR</th>
<th>IMDG</th>
<th>IATA</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1. UN number</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>14.2. UN proper shipping name</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>14.3. Transport hazard class(es)</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td></td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>14.4. Packing group</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>14.5. Environmental hazards</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

14.6. Special precautions for user

- Overland transport
  Not applicable

- Transport by sea
  Not applicable

- Air transport
  Not applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code
Not applicable
SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Dimethyl sulfoxide is not on the REACH Candidate List

Dimethyl sulfoxide is not on the REACH Annex XIV List

15.1.2. National regulations

Germany

Reference to AwSV: Water hazard class (WGK) 1, low hazard to water (Classification according to VvVwS, Annex 3; ID No. 5050)


Netherlands

SZW-lijst van kankerverwekkende stoffen: The substance is not listed

SZW-lijst van mutagene stoffen: The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding: The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid: The substance is not listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling: The substance is not listed

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Indication of changes:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4</td>
<td>Emergency telephone number</td>
<td>Modified</td>
</tr>
<tr>
<td>7.1</td>
<td>Precautions manipulation</td>
<td>Added</td>
</tr>
<tr>
<td>8.2</td>
<td>Hand protection</td>
<td>Modified</td>
</tr>
<tr>
<td>9.1</td>
<td>Melting point</td>
<td>Modified</td>
</tr>
</tbody>
</table>

Abbreviations and acronyms:

ADN European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR European Agreement concerning the International Carriage of Dangerous Goods by Road

BCF Bioconcentration factor

CLP Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008

DPD Dangerous Preparations Directive 1999/45/EC

DSD Dangerous Substances Directive 67/548/EEC

IATA International Air Transport Association

IMDG International Maritime Dangerous Goods

LC50 Median lethal concentration

LD50 Median lethal dose
Dimethyl sulfoxide
Safety Data Sheet

according to Regulation (EU) 2015/830

<table>
<thead>
<tr>
<th>LOAEL</th>
<th>Lowest Observed Adverse Effect Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAEC</td>
<td>No-Observed Adverse Effect Concentration</td>
</tr>
<tr>
<td>PBT</td>
<td>Persistent Bioaccumulative Toxic</td>
</tr>
<tr>
<td>SDS</td>
<td>Safety Data Sheet</td>
</tr>
</tbody>
</table>


Full text of H- and EUH-statements:

| Eye Irrit. 2     | Serious eye damage/eye irritation, Category 2               |
| Skin Irrit. 2    | Skin corrosion/irritation, Category 2                      |
| H315             | Causes skin irritation.                                    |
| H319             | Causes serious eye irritation.                             |

SDS Biochemicals version 2018

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.