SAFETY DATA SHEET

SECTION 1: PRODUCT IDENTIFICATION

PRODUCT NAME
DIMETHYL SULFOXIDE, USP

PRODUCT CODE
2430

SUPPLIER
MEDISCA Inc.
Tel.: 1.800.932.1039 | Fax.: 1.855.850.5855
661 Route 3, Unit C, Plattsburgh, NY, 12901
3955 W. Mesa Vista Ave., Unit A-10, Las Vegas, NV, 89118
6641 N. Belt Line Road, Suite 130, Irving, TX, 75063

MEDISCA Pharmaceutique Inc.
Tel.: 1.800.665.6334 | Fax.: 514.338.1693
4509 Rue Dobrin, St. Laurent, QC, H4R 2L8
21300 Gordon Way, Unit 153/158, Richmond, BC V6W 1M2

MEDISCA Australia PTY LTD
Tel.: 1.300.786.392 | Fax.: 61.2.9700.9047
Unit 7, Heritage Business Park
5-9 Ricketty Street, Mascot, NSW 2020

EMERGENCY PHONE
CHEMTREC Day or Night Within USA and Canada: 1-800-424-9300
NSW Poisons Information Centre: 131 126

USES
Solvent, anti-inflammatory (topical), cryoprotective.

SECTION 2: HAZARDS IDENTIFICATION

GHS CLASSIFICATION
Flammable Liquid (Category 4)
Acute Aquatic Toxicity (Category 3)

PICTOGRAM
Not Applicable

SIGNAL WORD
Warning

HAZARD STATEMENT(S)
Combustible liquid.
Harmful to aquatic life.

AUSTRALIA-ONLY HAZARDS
Repeated exposure may cause skin dryness or cracking.

PRECAUTIONARY STATEMENT(S)
Prevention
Keep away from heat, sparks, open flames and/or hot surfaces.
Wear protective gloves, eye protection and face protection.
Avoid release to the environment

Response
IN CASE OF FIRE: Small fire: dry chemical, CO2 or water spray. Large fire: dry chemical,
CO2, alcohol resistant foam or water spray. Do not get water inside containers. In case of
fire: keep drums, etc., cool by spraying with water.

Storage
Store in a well-ventilated place. Keep cool.

Disposal
Dispose of contents and/or container in accordance with local regulations.

HMIS CLASSIFICATION
Health Hazard 1
Flammability 2
Reactivity 0
Personal Protection H

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME
Methane, 1,1'-sulfinylbis

BOTANICAL NAME
Not applicable
SAFETY DATA SHEET

SYNONYM
DMSO; Methyl sulfoxide

CHEMICAL FORMULA
C₉H₆OS

CAS NUMBER
67-68-5

ALTERNATE CAS NUMBER
Not applicable

MOLECULAR WEIGHT
78.1344

COMPOSITION

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS NUMBER</th>
<th>% BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMETHYL SULFOXIDE</td>
<td>67-68-5</td>
<td>100</td>
</tr>
</tbody>
</table>

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as health hazards and hence require reporting in this section.

NOTES
Chemical family: Dipolar aprotic solvent.

SECTION 4: FIRST-AID MEASURES

IN CASE OF EYE CONTACT
Flush with copious amounts of water for 15 minutes, separating eyelids with fingers. If irritation persists seek medical aid.

IN CASE OF SKIN CONTACT
Wash with soap & water for 15 minutes. If irritation persists seek medical aid.

IF SWALLOWED
Call a physician. Wash out mouth with water. Do not induce vomiting without medical advice.

IF INHALED
Not expected to present a significant hazard under anticipated conditions of normal use.

SECTION 5: FIREFIGHTING MEASURES

SPECIFIC HAZARDS ARISING FROM THE CHEMICAL
Above 87°C explosive vapour/air mixtures may be formed. Above 87°C use a closed system, ventilation and explosion-proof electrical equipment.

FLAMMABLE PROPERTIES
Combustible liquid

HAZARDOUS COMBUSTION PRODUCTS
Under fire conditions, hazardous fumes will be present.

EXTINGUISHING MEDIA
Small fire: dry chemical, CO₂ or water spray. Large fire: dry chemical, CO₂, alcohol resistant foam or water spray. Do not get water inside containers. In case of fire: keep drums, etc., cool by spraying with water.

PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIREFIGHTERS
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

SECTION 6: ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

METHODS & MATERIAL FOR CONTAINMENT
On land, sweep or shovel into suitable containers.

CLEANUP PROCEDURE
Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear respirator, chemical safety goggles, rubber boots and heavy rubber gloves. Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Shut off all sources of ignition. Evacuate the area. If necessary, employ water fog to disperse the vapors. Absorb the matter with compatible vermiculite or other absorbing material. Place in a suitable container and retain for disposal. Ventilate and clean the affected area. Do not flush into sewerage system or to drains.
SECTION 7: HANDLING AND STORAGE

PRECAUTIONS FOR SAFE HANDLING
Do not inhale. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Wash thoroughly after handling. Store away from incompatible materials, in a well-ventilated area. Eliminate all sources of ignition. Store in accordance with local regulations. Do not store in unlabelled containers. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Use appropriate containment to avoid environmental contamination.

STORAGE CONDITIONS
Store in original container, tightly sealed, protected from direct sunlight and moisture.

The freezing point of DMSO is 18.5°C (65.3°F). Product is not affected by cycling freezing and thawing conditions as long as label directions are followed. DMSO can be left at warm room temperature or in a water bath at 40°C to thaw. Gently stir or tumble the container to ensure it is homogenous.

Preserve in tight, light-resistant containers, away from heat and sources of ignition.

SECTION 8: EXPOSURE CONTROLS/ PERSONAL PROTECTION

Chemical Name: DIMETHYL SULFOXIDE    CAS #: 67-68-5

<table>
<thead>
<tr>
<th></th>
<th>TWA</th>
<th>Ceiling</th>
<th>STEL</th>
<th>REL</th>
<th>IDLH</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td>ACGIH TLV</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>NIOSH</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>-</td>
</tr>
<tr>
<td>AIHA WEEL</td>
<td>250 ppm (8hr)</td>
<td>N/L</td>
<td>N/L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Safe Work Australia HSIS</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>HSE</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OSHA PEL</td>
<td>N/L</td>
<td>N/L</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

N/L = Not Listed

EXPOSURE GUIDELINES
Consult local authorities for provincial or state exposure limits. Particulates not otherwise regulated, respirable fraction: 5 mg/m³

PERSONAL PROTECTIVE EQUIPMENT
Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by WHMIS or OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166. Skin: Wear appropriate gloves to prevent skin exposure. Clothing: Wear appropriate protective clothing to minimize contact with skin. Respirators: Follow WHMIS or 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.

SPECIFIC ENGINEERING CONTROLS
Adequate mechanical ventilation. Fumehood, eye wash station, and safety shower.

NOTES
The substance can be absorbed into the body by inhalation, through the skin and by ingestion. Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Use process enclosures, local exhaust ventilation, or other engineering controls to maintain ventilation. In case of mist formation use a respirator. Respirator type: organic vapor cartridge, SCBA or SAR. If respirators are used, a program should be instituted to assure compliance with OSHA standard 29 CFR § 1910.134.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL STATE: Liquid
DESCRIPTION: Clear, colorless, odorless, hygroscopic liquid.
SOLUBILITY: Soluble in water; practically insoluble in acetone, in alcohol, in benzene, in chloroform, and in ether.
ODOR: Odorless
### FLAMMABILITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>Combustible liquid</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>Not available</td>
</tr>
<tr>
<td>pH</td>
<td>8.5 (50%)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>18.5°C, 65.3°F</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>189°C, 372.2°F</td>
</tr>
<tr>
<td>Freezing Point</td>
<td>18.5°C, 65.3°F</td>
</tr>
<tr>
<td>Flash Point</td>
<td>89°C, 192.2°F (Closed Cup)</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>1.1 (20°C)</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>0.026</td>
</tr>
<tr>
<td>Explosive Limit</td>
<td>Not available</td>
</tr>
<tr>
<td>Upper Flammable/Explosive Limit(s)</td>
<td>42-63%</td>
</tr>
<tr>
<td>Lower Flammable/Explosive Limit(s)</td>
<td>3.1-3.5%</td>
</tr>
<tr>
<td>Vapour Density (Air = 1)</td>
<td>2.7</td>
</tr>
<tr>
<td>Relative Density (Water = 1)</td>
<td>Not available</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>Not available</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>0.61 mmHg</td>
</tr>
<tr>
<td>Log P (Octanol-Water)</td>
<td>-2.03</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not available</td>
</tr>
</tbody>
</table>

### NOTES

The physical data presented above are typical values and should not be construed as a specification.

### SECTION 10: STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reactivity</td>
<td>Above 87°C explosive vapour/air mixtures may be formed.</td>
</tr>
<tr>
<td>Stability</td>
<td>Stable under recommended storage conditions</td>
</tr>
<tr>
<td>Materials to Avoid</td>
<td>Strong oxidants</td>
</tr>
<tr>
<td>Hazardous Decomposition Products</td>
<td>Toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides and other gases may occur</td>
</tr>
<tr>
<td>Hazardous Polymerization</td>
<td>Will not occur</td>
</tr>
<tr>
<td>Possibility of Hazardous Reaction</td>
<td>Not established</td>
</tr>
<tr>
<td>Conditions to Avoid</td>
<td>Moisture, sunlight and extreme temperatures</td>
</tr>
</tbody>
</table>

### SECTION 11: TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity</td>
<td>Oral: Rat: LD50: (mg/kg): 14 500</td>
</tr>
<tr>
<td></td>
<td>Dermal: Rabbit LD50: (mg/kg): 40 000</td>
</tr>
<tr>
<td></td>
<td>Inhalation: Rat: LC50: (mg/L/4hr): 40 000</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>Repeated skin application (human): Slight irritation</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
<tr>
<td>Respiratory or Skin Sensitization</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
<td>Based on available data, the classification criteria are not met.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>OSHA: DIMETHYL SULFOXIDE is not listed.</td>
</tr>
<tr>
<td></td>
<td>NTP: DIMETHYL SULFOXIDE is not listed.</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

IARC
DIMETHYL SULFOXIDE is not evaluated.

California Proposition 65
This product does not contain any chemicals known to the State of California to cause cancer, birth defects, or any other reproductive harm.

ADDITIONAL CARCINOGENICITY INFORMATION
Based on available data, the classification criteria are not met.

REPRODUCTIVE TOXICITY
DMSO is not considered to be directly embryotoxic and has been shown to be a successful cryoprotectant for mammalian semen and embryos.
A mouse teratology NOEL of 12 g/kg/day has been established based on research with a 50% DMSO solution administered orally. Teratology data suggests that:
1. DMSO is not a teragen to mammals when administered via oral and dermal routes at dose level that do not produce overt maternal toxicity.
2. DMSO is not a teragen at low dose levels regardless of the route of administration.
3. The teratogenic potential of DMSO is dependent on route of administration, the dose level and the gestational time of exposure, but in all cases is extremely low or non-existent.

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE
Based on available data, the classification criteria are not met.

SPECIFIC TARGET ORGAN TOXICITY - REPEATED EXPOSURE
Repeated or prolonged contact with skin may cause dermatitis.

ASPIRATION HAZARDS
Not expected to present a significant hazard under anticipated conditions of normal use.

SIGNS AND SYMPTOMS OF EXPOSURE
May be harmful if inhaled. May cause respiratory tract irritation.
Ingestion
May be harmful if swallowed.
Skin
May be harmful if absorbed through skin. Causes skin irritation.
Eyes
Causes eye irritation.

SECTION 12: ECOLOGICAL INFORMATION

TOXICITY
EC50: 48 Hr: Crustacea: Daphnia magna: (mg/L): 16
LC50: 96 Hr: Fish: (mg/L): 34000
EC50: 72 or 96 Hr: Algae (or other aqua plants): (mg/L): Not available

PERSISTENCE AND DEGRADABILITY
Biodegradation: 90

BIOACCUMULATIVE POTENTIAL
Moderate; Log Pow: -2.03.

MOBILITY IN SOIL
Soluble in water
Henry's Law Constant: 1.51E-09 atm-m³/mole (25°C)

OTHER ADVERSE EFFECTS
Not available

This product is not intended to be released into the environment

SECTION 13: DISPOSAL CONSIDERATIONS

WASTE DISPOSAL
Dispose of in accordance with federal / local laws and regulations. Avoid release into the environment.
Dilute and flush to an approved wastewater treatment system. Bacterial decomposition of dimethyl sulfoxide during wastewater treatment can result in the release of dimethyl sulfide (a volatile substance with a strong disagreeable odor). Waste DMSO can also be incinerated in an approved furnace where permitted. Consult federal, state or local authorities for proper disposal procedures.
SECTION 14: TRANSPORT INFORMATION

UNITED STATES & CANADA
UN PROPER SHIPPING NAME  Not dangerous good
UN NUMBER  Not applicable
CLASS  Not applicable
PACKING GROUP  Not applicable

AUSTRALIA
UN PROPER SHIPPING NAME  Not dangerous good
UN NUMBER  Not applicable
CLASS  Not applicable
PACKING GROUP  Not applicable
HAZCHEM  Not Applicable
ENVIRONMENTAL HAZARDS  Not available
SPECIAL SHIPPING INFORMATION  Not applicable

SECTION 15: REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>Chemical Name &amp; CAS</th>
<th>CERCLA 40 CFR Part 302.4</th>
<th>SARA (Title III) 40 CFR Part 372.65 Appendix A</th>
<th>EPA 40 CFR Part 355 Appendix B</th>
<th>Pennsylvania</th>
<th>Right-to-know New Jersey</th>
<th>Massachusetts</th>
<th>California Prop 65</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMETHYL SULFOXIDE 67-68-5</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
<td>X</td>
<td>N/L</td>
</tr>
</tbody>
</table>

N/L = Not Listed; X = Listed

AUSTRALIAN REGULATIONS

<table>
<thead>
<tr>
<th>Chemical Name &amp; CAS</th>
<th>Poisons and Therapeutic Goods Regulation</th>
<th>Therapeutic Goods Act</th>
<th>Code of Practices - Illicit Drug Precursors</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIMETHYL SULFOXIDE 67-68-5</td>
<td>N/L</td>
<td>N/L</td>
<td>N/L</td>
</tr>
</tbody>
</table>

SECTION 16: OTHER INFORMATION

REFERENCES  Available upon request
ABBREVIATIONS AND ACRONYMS

CAS – Chemical Abstract Service; GHS – Global Harmonized System; OSHA PEL – Occupational Safety & Health Administration Permissible Exposure Limits; TWA – Time Weighted Average; HSIS – Hazardous Substances Information System; STEL – Short Term Exposure Limit; AIHA WEEL – American Industrial Hygiene Association Workplace Environment Exposure Levels; LD50 – Lethal Dose, 50%; IARC – International Agency for Research on Cancer; NTP – National Toxicology Program; WHMIS – Workplace Hazardous Materials Information System; SARA – Superfund Amendments and Reauthorization Act; EPA – Environmental Protection Agency; CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act; HMIS – Hazardous Materials Information System; NIOSH – National Institute for Occupational Safety and Health; MSHA - Mine Safety and Health Administration; ACGIH - American Conference of Governmental Industrial Hygienists; IDHL - Immediately Dangerous to Health or Life; TLV – Threshold Limit Value; HSE – Health and Safety Executive; REL - Recommended Exposure Limit

LAST REVISION

11/2018

SUPERSEDES

01/2016

DISCLAIMER

This document was created in accordance with OSHA, Safe Work Australia and WHMIS regulations. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. MEDISCA® shall not be held liable for any damage resulting from handling or from contact with the above product. Recipients of the product must take responsibility for observing existing laws and regulations.