

SAFETY DATA SHEET

Preparation Date: 1/26/2015

Revision Date: 1/26/2015

Revision Number: G1

Product identifier

Product code: D2490
Product Name: DIMETHYL SULFOXIDE-D6, 100 ATOM PERCENT D

Other means of identification

Synonyms: Hexadeuterodimethyl Sulfoxide
Please note that this product is not radioactive. The data given for this product are those for the corresponding unlabeled material unless specifically indicated otherwise. Health and safety data for the labeled material are generally unavailable, but are assumed to be similar or identical to the corresponding unlabeled material.

CAS #: 2206-27-1
RTECS # Not available
CI#: Not available

Recommended use of the chemical and restrictions on use

Recommended use: No information available.
Uses advised against No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: <https://www.spectrumchemical.com>

Emergency telephone number Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Serious eye damage/eye irritation	Category 2B
Flammable liquids	Category 4

Label elements

Warning

Hazard statements

Causes eye irritation
Combustible liquid



Hazards not otherwise classified (HNOC)

Not Applicable

Other hazards

Not available

Precautionary Statements - Prevention

Wash face, hands and any exposed skin thoroughly after handling
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Wear protective gloves/protective clothing/eye protection/face protection

In case of fire: Use CO₂, dry chemical, or foam to extinguish.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Precautionary Statements - Storage

Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-No.	Weight %	Trade Secret
Dimethyl Sulfoxide-d6 100 atom % 2206-27-1	2206-27-1	100	*

4. FIRST AID MEASURES

First aid measures

General Advice:

Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126)

4. FIRST AID MEASURES

Skin Contact:	Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention.
Eye Contact:	Flush eye with water for 15 minutes. Get medical attention.
Inhalation:	Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
Ingestion:	Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms	Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhoea. May cause constipation. May cause anorexia. Central nervous system effects. May cause headache. Dizziness. Ataxia. May affect behavior/central nervous system (tremor, convulsions). Analgesia. May cause cardiovascular effects. It may cause transient photophobia and disturbances of vision. May affect respiration. May cause cyanosis. May affect the liver. It may affect the kidneys. May cause hypoglycemia.
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Indication of any immediate medical attention and special treatment needed

Notes to Physician:	Treat symptomatically
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Protection of first-aiders

First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media:	Dry chemical. Carbon dioxide (CO ₂). Water spray mist or foam.
Unsuitable Extinguishing Media:	High volume water jet. Do not use a solid (straight) water stream as it may scatter and spread fire.

Specific hazards arising from the chemical

Hazardous Combustion Products:	Carbon monoxide; Carbon dioxide; Sulfur oxides; Formaldehyde and Methyl mercaptan may also be formed
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Specific hazards:	Combustible material. Vapors may form explosive mixtures with air. Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks). Container explosion may occur under fire conditions or when heated. Fire may produce irritating, corrosive and/or toxic gases.
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Special Protective Actions for Firefighters

Specific Methods:	Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.
Special Protective Equipment 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, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. All equipment used when handling the product must be grounded.

Environmental precautions Should not be released into the environment. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods and material for containment and cleaning up

Methods for containment Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth).

Methods for cleaning up Clean contaminated surface thoroughly. Use appropriate tools to put the spilled material in a suitable chemical waste disposal container.

7. HANDLING AND STORAGE

Precautions for safe handling

Technical Measures/Precautions:

Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Do not ingest. Do not breathe vapors or spray mist. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Hygroscopic. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Keep away from heat and sources of ignition. Protect from light. Sensitive to light. Store in light-resistant containers. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Materials:

Oxidizing agents. Reducing agents. Acids. Bases. Alkali Metals. Acid chlorides. Acid anhydrides. Potassium t-butoxide. boron compounds. Sodium isopropoxide. Dinitrogen tetroxide. Carbonyl diisothiocyanate. Acetanilide. Many acyl, aryl, and nonmetal halides (eg acetyl chloride, benzenesulfonyl chloride, bromobenzoyl actanilide, cyanuric chloride, iodine pentafluoride, Mg(ClO₄)₂, CH₃Br, NiO₄, oxalyl chloride, P₂O₃, phosphorus trichloride, phosphoryl chloride, silver fluoride, silver difluoride, sodium hydride, sulfur dichloride, disulfur dichloride, sulfurylchloride, tetrachlorosilane, and thionyl chloride).

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

National occupational exposure limits

U.S Occupational Exposure Limits:

United States

Components	OSHA	NIOSH	ACGIH	AIHA WHEEL
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Dimethyl Sulfoxide-d6 100 atom % - 2206-27-1	None	None	None	None
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Canada

Canada Occupational Exposure Limits: Not determined

Components	Alberta	British Columbia	Ontario	Quebec
Dimethyl Sulfoxide-d6 100 atom % - 2206-27-1	None	None	None	None

Australia and Mexico

Occupational Exposure Limits for Australia and Mexico: Not determined

Components	Australia	Mexico
Dimethyl Sulfoxide-d6 100 atom % 2206-27-1	None	None

Appropriate engineering controls

Engineering measures to reduce exposure:

Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

Eye protection: Goggles.

Skin and body protection: Long sleeved clothing. Chemical resistant apron. Gloves.

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Respiratory protection is not necessary for normal handling. Good room ventilation or use of local exhaust (fume hood) is sufficient. Use a vapor respirator under conditions where exposure to the substance is apparent (e.g. generation of high concentrations of mist or vapor, inadequate ventilation, development of respiratory tract irritation), and engineering controls are not feasible. Be sure to use an approved/certified respirator or equivalent. .

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

9. PHYSICAL AND CHEMICAL PROPERTIES

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid.	Appearance: No information available	Color: Clear. Colorless.
Odor: Slight. Sulfurous. Distinctive garlic or oyster-like.	Taste No information available	Formula: CD3SOCD3
Molecular/Formula weight: 87.14	Flash point (°C): 87	Flashpoint (°C/°F): 87-89 °C/188.6-192.2 °F
Flash Point Tested according to: Closed cup	Lower Explosion Limit (%): 2.6-3.5%	Upper Explosion Limit (%): 28.5-42%
Autoignition Temperature (°C/°F): 300-301 °C/572-574 °F	pH: No information available	Melting point/range(°C/°F): No information available
Boiling point/range(°C/°F): 189 °C/372°F	Decomposition temperature(°C/°F): No information available	Specific gravity: No information available
Density (g/cm3): 1.18-1.19	Bulk density: No information available	Vapor pressure @ 20°C (kPa): 0.055
Evaporation rate: No information available	Vapor density: 2.71	VOC content (g/L): No information available
Odor threshold (ppm): No information available	Partition coefficient (n-octanol/water): No information available	Viscosity: No information available
Miscibility: Completely miscible with water	Solubility: No information available	

10. STABILITY AND REACTIVITY

Reactivity

No information available

Chemical stability

Stability: Stable at normal conditions

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Ignition sources. Exposure to light. Exposure to moisture. Exposure to moist air.

Incompatible Materials: Oxidizing agents. Reducing agents. Acids. Bases. Alkali Metals. Acid chlorides. Acid anhydrides. Potassium t-butoxide. boron compounds. Sodium isopropoxide. Dinitrogen tetraoxide. Carbonyl diisothiocyanate. Acetanilide. Many acyl, aryl, and nonmetal halides (eg acetyl chloride, benzenesulfonyl chloride, bromobenzoyl actanilide, cyanuric chloride, iodine pentafluoride, Mg(ClO₄)₂, CH₃Br, NiO₄, oxalyl chloride, P₂O₃, phosphorus trichloride, phosphoryl chloride, silver fluoride, silver difluoride, sodium hydride, sulfur dichloride, disulfur dichloride, sulfurylchloride, tetrachlorosilane, and thionyl chloride).

Hazardous decomposition products: When heated to decomposition it emits toxic fumes. Carbon monoxide. Carbon dioxide. Sulphur oxides. Formaldehyde. Methyl mercaptan. Dimethyl sulfide.

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Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:

Skin. Ingestion. Eyes.

Acute Toxicity

Component Information

Dimethyl Sulfoxide-d6 100 atom % - 2206-27-1

LD50/oral/rat = 14500 mg/kg (LD50 oral Rat for Dimethyl Sulfoxide (CAS no. 67-68-5))

LD50/oral/mouse = 7920-21400 mg/kg (LD50 oral Mouse for Dimethyl Sulfoxide (CAS no. 67-68-5))

LD50/dermal/rabbit = No information available

LD50/dermal/rat = 40000 mg/kg (LD50 dermal Rat for Dimethyl Sulfoxide (CAS no. 67-68-5))

LC50/inhalation/rat = >1600 mg/m³ 4 hr (LC50 Rat for Dimethyl Sulfoxide (CAS no. 67-68-5))

LC50/inhalation/mouse = No information available

Other LD50 or LC50 information = 17400 mg/kg LD50 oral Rat (For Dimethyl Sulfoxide (CAS no. 67-68-5))

28300 mg/kg LD50 oral Rat (For Dimethyl Sulfoxide (CAS no. 67-68-5))

Product Information

LD50/oral/rat =

VALUE- Acute Tox Oral = No information available

LD50/oral/mouse =

Value - Acute Tox Oral = No information available

LD50/dermal/rabbit

VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat

VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat

VALUE-Vapor = No information available

VALUE-Gas = No information available

VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

VALUE-Vapor = No information available

VALUE - Gas = No information available

VALUE - Dust/Mist = No information available

Symptoms

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Skin Contact: May cause skin irritation. Mild skin irritation. May cause burning or stinging sensation, redness of the skin, inflammation of the skin.. May cause itching. May cause urticaria (hives). Dimethyl Sulfoxide readily penetrates the skin and may carry other dissolved chemicals into the body. Skin absorption of DMSO may result in garlic-like breath and body odor. If absorbed through skin it may cause systemic effects with symptoms similar to those of ingestion. May cause dyspnea (shortness of breath and difficulty breathing) and cyanosis.

Eye Contact: May cause eye irritation. Mild eye irritation. May cause temporary burning sensation and vasodilation. May cause conjunctivitis. May cause conjunctival redness. May cause cataracts. May cause corneal opacity. It may cause transient photophobia and disturbances of vision.

Inhalation May cause irritation of respiratory tract. Inhalation of a high concentration of vapors may cause headache, dizziness, and sedation.

Ingestion Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea
May cause constipation
May cause abdominal pain
May cause decreased appetite or anorexia
May affect respiration (difficult or labored breathing resulting in shortness of breath)
May affect respiration (respiratory depression)
May affect urinary system (kidneys)
May cause increase in urine volume
May affect blood (changes in serum composition)
It may affect the blood (anemia, eosinophilia)
It may affect the brain
May affect the cardiovascular system (vasodilation, hypotension, tachycardia, chest pain)
May affect behavior/central nervous system (ataxia)
May affect behavior/central nervous system (muscle weakness, convulsions)
May affect behavior/central nervous system (dizziness, headache)
May affect behavior/central nervous system (analgesia, fatigue, sedation, tremor)
May cause hypoglycemia (low blood sugar), which is characterized by symptoms such as blurred vision, chills, cold sweat, dizziness, drowsiness, shaking, rapid heart rate, confusion, weakness, headache, fainting, hunger, tingling of the hands or feet
May affect liver

Aspiration hazard No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity Prolonged or repeated ingestion may cause nausea, vomiting, loss of appetite
Prolonged or repeated ingestion may affect the blood (changes in red blood cell count)
Prolonged or repeated ingestion may affect the blood (normocytic anemia)
Prolonged or repeated ingestion may affect the kidneys (polyuria (increase in urine volume, hematuria (blood in the urine), tubular necrosis)
Prolonged skin contact may cause skin irritation and/or dermatitis
Chronic exposure may cause drying and scaling of the skin

Sensitization: No information available

Mutagenic Effects: May affect genetic material
Mutations in microorganisms
Experiments with bacteria and/or yeast have shown mutagenic effects
Mutagenic effects in mammalian somatic cells

Carcinogenic effects: Equivocal tumorigenic agent by Registry of Toxic Effects of Chemical Substances (RTECS) criteria.

Components	ACGIH - Carcinogens	IARC	NTP	OSHA HCS - Carcinogens	Australia - Prohibited Carcinogenic Substances	Australia - Notifiable Carcinogenic Substances
Dimethyl Sulfoxide-d6 100 atom %	Not listed	Not listed	Not listed	Not listed	Not listed	Not listed

Reproductive toxicity No data is available

Reproductive Effects: No information available
Developmental Effects: No information available
Teratogenic Effects: Showed teratogenic effects in animal experiments
 Dimethyl Sulfoxide (DMSO) has been associated with teratogenic and/or embryotoxic effects in animals (hamster, mouse, rat), particularly when administered parenterally (intraperitoneal or intravenous routes). DMSO has not been shown to be teratogenic or embryotoxic via oral or dermal routes at dose levels that do not produce overt maternal toxicity
 No data in humans was available to evaluate the effects of exposure on development

Specific Target Organ Toxicity

STOT - single exposure No information available
STOT - repeated exposure No information available
Target Organs: Kidneys. Skin. Central nervous system.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.
Persistence and degradability: No information available
Bioaccumulative potential: No information available
Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products:
 Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
 Empty containers should be taken for local recycling, recovery or waste disposal

Components	RCRA - F Series Wastes	RCRA - K Series Wastes	RCRA - P Series Wastes	RCRA - U Series Wastes
Dimethyl Sulfoxide-d6 100 atom %	None	None	None	None

14. TRANSPORT INFORMATION

DOT

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: Not applicable
Packing Group: None
ERG No: No information available
Marine Pollutant No data available
DOT RQ (lbs): No information available

TDG (Canada)

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

ADR

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available
IMDG Page: No information available
Marine Pollutant No information available
MFAG: No information available
Maximum Quantity: No information available

RID

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Classification Code: No information available
Description: No information available

ICAO

UN-No: Not Regulated
Proper Shipping Name: No information available

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Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

IATA

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

15. REGULATORY INFORMATION**International Inventories**

Components	U.S. TSCA	KOREA KECL	Philippines (PICCS)	Japan ENCS	CHINA	Australia (AICS)	EINECS-No.
Dimethyl Sulfoxide-d6 100 atom %	Not Listed	Present KE-11860	Present	Not present	Present	Present	Present 218-617-0

U.S. Regulations**California Prop. 65: Safe Drinking Water and Toxic Enforcement Act of 1986.****Chemicals Known to the State of California to Cause Cancer:**

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:

This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Components	Carcinogen	Developmental Toxicity	Male Reproductive Toxicity	Female Reproductive Toxicity:
Dimethyl Sulfoxide-d6 100 atom %	Not Listed	Not Listed	Not Listed	Not Listed

CERCLA/SARA

Components	CERCLA - Hazardous Substances and their Reportable Quantities	Section 302 Extremely Hazardous Substances and TPQs	Section 302 Extremely Hazardous Substances and RQs	Section 313 - Chemical Category	Section 313 - Reporting <i>de minimis</i>
Dimethyl Sulfoxide-d6 100 atom %	None	None	None	None	None

U.S. TSCA

Components	TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)	TSCA 8(d) -Health and Safety Reporting
Dimethyl Sulfoxide-d6 100 atom %	Not Applicable	Not Applicable

Canada**WHMIS hazard class:**

B3 Combustible liquid

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Canada Controlled Products Regulation:

This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

Components	Canada (DSL)	Canada (NDSL)
Dimethyl Sulfoxide-d6 100 atom %	Present	Not Listed

Components	CEPA Schedule I - Toxic Substances	CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting
Dimethyl Sulfoxide-d6 100 atom %	Not listed	Not listed

EU Classification**R-phrase(s)**

not determined

S -phrase(s)

none

Components	Classification	Concentration Limits:	Safety Phrases
Dimethyl Sulfoxide-d6 100 atom %		No information	

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:

Not dangerous

16. OTHER INFORMATION

16. OTHER INFORMATION

NFPA	HMIS	Personal Protective Equipment
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Health Hazard	1
Fire Hazard	2
Reactivity	0



Preparation Date: 1/26/2015
Revision Date: 1/26/2015
Prepared by: Sonia Owen

Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet