



SAFETY DATA SHEET DIMETHYL SULFOXIDE REVISION 4, DATE 08 OCT 21

1. IDENTIFICATION

Product Name	Dimethyl sulfoxide
Other Names	DMSO; Methane, sulfinylbis-
Uses	Solvent and chemical intermediate for Domestic use, including in: coatings, paints, lacquers and varnishes; paint and varnish removers; washing and cleaning products; ink and toners; fillers, putties, plasters and modelling clay; and polishes and wax blends. In addition, this has Commercial use, including in: anti-freeze and de-icing products; adhesives and sealants; hydraulic fluids; and construction materials.
Chemical Family	No Data Available
Chemical Formula	C ₂ H ₆ O _S
Chemical Name	Dimethyl sulfoxide
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

2. HAZARD IDENTIFICATION



Poisons Schedule (Aust)

Schedule 6

Globally Harmonised System

Hazard Classification		Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories		Flammable Liquids - Category 4	
Signal Word		Warning	
Hazard Statements		H227	Combustible liquid.
Precautionary Statements	Prevention	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
		P280	Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator.
	Response	P370 + P378	In case of fire: Use carbon dioxide (CO ₂), dry chemical, alcohol resistant foam or water spray for extinction.
	Storage	P403	Store in a well-ventilated place.
	Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Dimethyl sulfoxide	C ₂ H ₆ OS	67-68-5	<=100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth with water. Do NOT induce vomiting. Get medical advice/attention if you feel unwell. Never give anything by mouth to an unconscious person.
Eye	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses, if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.

Skin	IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately wash skin and hair with plenty of soap and running water. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically. Show this safety data sheet to the doctor in attendance.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after fire is out.
Flammability Conditions	Combustible liquid (C1); May burn but does not ignite readily.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), alcohol-resistant foam or water spray for extinction. Do not scatter spilled material with high-pressure water streams. *For large fires, fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
Fire and Explosion Hazard	Containers may explode when heated. Vapours may form explosive mixtures with air. Vapours are heavier than air and will collect in low or confined areas.
Hazardous Products of Combustion	Fire may produce irritating and/or toxic fumes, including Carbon oxides, Sulfur oxides.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	87 °C [Closed cup]
Lower Explosion Limit	2.6 %
Upper Explosion Limit	28.5 %
Auto Ignition Temperature	300 - 302 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Pick up with sand or other non-combustible absorbent material and place into suitable, closed containers for later disposal (see SECTION 13).
Containment	Stop leak if safe to do so. Prevent entry into waterways, drains or confined areas. Dike far ahead of large spill for later disposal. *Beware of vapours accumulating to form explosive concentrations. Vapours are heavier than air and will collect in low or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Do not let product enter drains or waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
Personal Precautionary Measures	Use personal protective equipment (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing mist/vapours and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment (see SECTION 8). Combustible liquid (C1): Keep away from heat and sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). *Store under inert gas (hygroscopic).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	Contains no substances with occupational exposure limit values.
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	<ul style="list-style-type: none"> - Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Use a full-face respirator with multi-purpose combination, or type ABEK, respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses with side-shields. Use equipment for eye protection tested and approved under appropriate government standards. - Hand protection: Handle with gloves. Recommended: For full contact, Chloroprene (Break through time: 480 min. Glove thickness: 0.6 mm). For splash contact, Natural latex/chloroprene (Break through time: 120 min. Glove thickness: 0.6 mm). - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the hazardous substance(s) at the specific workplace.
Special Hazards Precautions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands before breaks and at the end of workday. Take off contaminated clothing and wash it before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Clear liquid
Odour	Odourless
Colour	Colourless
pH	No Data Available
Vapour Pressure	0.55 hPa (@ 20 °C)
Relative Vapour Density	2.70 Air = 1
Boiling Point	189 °C
Melting Point	16 - 19 °C
Freezing Point	16 - 19 °C
Solubility	Completely miscible with water - Soluble in alcohol, Diethyl ether
Specific Gravity	1.1 g/ml

Flash Point	87 °C [Closed cup]
Auto Ignition Temp	300 - 302 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	>190 °C
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	78.13 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	log Pow: -1.35 at 20 °C
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	Surface tension: 43.5 mN/m at 20 °C
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	Combustible liquid (C1); May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating and/or toxic fumes, including Carbon oxides, Sulfur oxides.
Release of Invisible Flammable Vapours and Gases	Vapours may form explosive mixtures with air.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable under recommended storage conditions.
Conditions to Avoid	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
Materials to Avoid	Incompatible/reactive with Acid chlorides, Phosphorus halides, Strong acids, Strong oxidizing agents, Strong reducing agents.
Hazardous Decomposition Products	Fire/decomposition may produce irritating and/or toxic fumes, including Carbon oxides, Sulfur oxides.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: No classification for acute toxicity has to be applied for DMSO [ECHA]. Exposure to large amounts can cause redness of skin, itching, burning, sedation, headache, nausea, dizziness.
- Skin corrosion/irritation: Classification for skin irritation is not warranted [ECHA]. Slight irritation (Rabbit, 4 h) [OECD Test Guideline 404].
- Eye damage/irritation: Classification for eye irritation is not warranted [ECHA]. Slight irritation (Rabbit, 24 h) [OECD Test Guideline 405].
- Respiratory/skin sensitisation: Classification for skin and respiratory sensitisation is not warranted [ECHA]. Negative (Maximization Test - Guinea pig) [OECD Test Guideline 406]. Negative (Local lymph node assay (LLNA) - Mouse) [OECD Test Guideline 429].
- Germ cell mutagenicity: Based on the available data, no classification for mutagenicity has to be applied for DMSO [ECHA]. Negative (Ames test - Salmonella typhimurium) [OECD Test Guideline 471]. Negative (sister chromatid exchange assay - Chinese hamster ovary cells) [OECD Test Guideline 479]. Negative (chromosome aberration - Chinese hamster ovary cells) [OECD Test Guideline 473].
- Carcinogenicity: No classification for carcinogenicity has to be applied for DMSO [ECHA]. No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- Reproductive toxicity: Based on the available data, no classification for reproductive toxicity has to be applied for DMSO [ECHA].
- STOT (single exposure): Classification for respiratory tract irritation is not warranted [ECHA].
- STOT (repeated exposure): Based on the available data, no classification for repeated toxicity has to be applied for DMSO [ECHA].
- Aspiration toxicity: No information available.

Acute**Ingestion**

Acute toxicity (Oral):
- LD50, Rat: 14,500 mg/kg [Supplier's SDS].

Other

Acute toxicity (Dermal):
- LD50, Rabbit: >5,000 mg/kg [Supplier's SDS].

Inhalation

Acute toxicity (Inhalation):
- LC50, Rat: 40,250 ppm (4 h) [Supplier's SDS].

Carcinogen Category

None

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Aquatic toxicity:
- LC50, Fish (Pimephales promelas): 34,000 mg/l (96 h).
- LC50, Fish (Oncorhynchus mykiss): 35,000 mg/l (96 h).
- EC50, Crustacea (Daphnia magna): 24,600 mg/l (48 h) [OECD Test Guideline 202].
- EC50, Algae/aquatic plants (Pseudokirchneriella subcapitata): 17,000 mg/l (72 h) [OECD Test Guideline 201].

Persistence/Degradability

Not readily biodegradable (31 %, 28 d) [OECD Test Guideline 301D].

Mobility

No information available.

Environmental Fate

Do not let product enter drains.

Bioaccumulation Potential

No information available.

Environmental Impact

No Data Available

13. DISPOSAL CONSIDERATIONS**General Information**

Dispose of contents/container in accordance with local/regional/national regulations.

Special Precautions for Land Fill

This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name	Dimethyl sulfoxide
Class	C1 Combustible Liquids - Flash Point >60°C - ≤93°C, Closed Cup
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	Dimethyl sulfoxide
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	Dimethyl sulfoxide
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Dimethyl sulfoxide
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available

Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Dimethyl sulfoxide
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Dimethyl sulfoxide
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	DIMETHYL SULFOXIDE
Poisons Schedule (Aust)	Schedule 6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002649 - Solvents (Combustible) Group Standard 2020
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National/Regional Inventories

Australia (AIIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Listed
China (IECSC)	Listed
Europe (EINECS)	200-664-3
Europe (REACH)	01-2119431362-50-
Japan (ENCS/METI)	2-1553
Korea (KECI)	KE-32367
Malaysia (EHS Register)	Not Listed
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Listed

16. OTHER INFORMATION

Related Product Codes	DIMESO1000, DIMESO1001, DIMESO1500, DIMESO1501, DIMESO1502, DIMESO1600, DIMESO2000, DIMESO3000, DIMESO4000, DIMESO5000, DIMESO6000, DIMESO9000
Revision	4
Revision Date	08 Oct 2021
Key/Legend	<p>< Less Than > Greater Than</p> <p>AICS Australian Inventory of Chemical Substances atm Atmosphere CAS Chemical Abstracts Service (Registry Number) cm² Square Centimetres CO₂ Carbon Dioxide COD Chemical Oxygen Demand deg C (°C) Degrees Celcius EPA (New Zealand) Environmental Protection Authority of New Zealand deg F (°F) Degrees Farenheit g Grams g/cm³ Grams per Cubic Centimetre g/l Grams per Litre HSNO Hazardous Substance and New Organism IDLH Immediately Dangerous to Life and Health immiscible Liquids are insoluable in each other. inHg Inch of Mercury inH₂O Inch of Water K Kelvin kg Kilogram kg/m³ Kilograms per Cubic Metre lb Pound</p>

LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

ltr or **L** Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Health and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion

ppm Parts per Million

ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight