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SAFETY DATA SHEET

Product Code: CSDL013-500M

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SECTION 1 PRODUCT IDENTIFICATION

GHS Product Identifier DIMETHYL SULFOXIDE

Recommended use of the chemical and restrictions on use

Solvent for polymerization and cyanide reactions, spinning polyacrylonitrile and other synthetic fibres, industrial cleaners, pesticides, paint stripping, hydraulic fluids, preservation of cells at low temperature, diffusion of drugs, etc, into blood stream by topical application, medicine (anti-inflammatory), plant pathology and nutrition, pharmaceutical products, metal-complexing agent and laboratory reagent

Other Names DIMETHYL SULFOXIDE LR
DMSO
Methyl sulfoxide
DIMETHYL SULFOXIDE AR

SECTION 2 HAZARD IDENTIFICATION

GHS Classification of the Substance/Mixture Not classified as hazardous according to the Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004) 3rd Edition, Safe Work Australia.
Not classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Characterization Liquid

Ingredients	CAS Number
Dimethyl Sulfoxide	67-68-5

SECTION 4 FIRST AID MEASURES

Inhalation Remove victim to fresh air. Keep warm and at rest. If rapid recovery does not occur, obtain medical attention.

Ingestion Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.

Skin Wash affected areas with copious quantities of water. Remove contaminated clothing and wash before re-use. If persistent irritation occurs, obtain medical attention

Eye Contact Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. If rapid recovery does not occur, obtain medical attention

First Aid Facilities Maintain eyewash fountain and safety shower in work area.

Advice to Doctor Treat symptomatically based on judgement of doctor and individual reactions of the patient

Other Information For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.



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SECTION 5 FIRE FIGHTING MEASURES

Hazards from Combustion Products	May evolve toxic fumes of sulfur oxides in fire.
Specific Methods	Small fire: Use dry chemical, CO ₂ , water spray or foam. Large fire: Use water spray, fog or foam. If safe to do so, move undamaged containers from the fire area. Cool containers with flooding quantities of water until well after the fire is out.
Specific Hazards Arising from the Chemical	May burn but do not ignite readily. Runoff may pollute waterways. Fire may produce irritating, poisonous and/or corrosive fumes. Containers may explode when heated.
Precautions in Connection with Fire	Wear SCBA and structural firefighter's uniform.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal Precautions	Avoid inhalation, contact with skin, eyes and clothing. Remove ignition sources
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum

SECTION 7 HANDLING AND STORAGE

Precautions for Safe Handling	Do not breathe vapour. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure.
Conditions for Safe Storage, Including any Incompatibilities	Store away from oxidizing agents. Keep container tightly closed and dry, away from direct sunlight and other sources of heat or ignition. Store at room temperature (15 - 25 °C).

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Other Exposure Information	A time weighted average (TWA) concentration for an 8 hour day, and 5 day week has not been established by SafeWork Australia for this product. There is a blanket limit of 10 mg/m ³ for mists when limits have not otherwise been established
Appropriate Engineering Controls	In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.
Respiratory Protection	Where ventilation is not adequate, respiratory protection may be required. Avoid breathing vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.
Eye Protection	The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.
Hand Protection	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: (Change gloves regularly.) Excellent: NR latex. Butyl rubber gloves Good: Nitrile rubber gloves Double glove

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Personal Protective Equipment	Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.
Footwear	Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use
Body Protection	Clean impervious clothing should be worn, preferably with an apron for extra protection. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals
Hygiene Measures	Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using

SECTION 9 PHYSICAL/CHEMICAL PROPERTIES

Form	Liquid
Appearance	Colourless liquid, hygroscopic.
Odour	Nearly odourless to a garlic-like odour.
Melting Point	18.5 °C
Boiling Point	189 °C
Solubility in Water	Soluble in water.
Solubility in Organic Solvents	Soluble in alcohols, esters, ketones, chlorinated solvents and aromatic hydrocarbons.
Specific Gravity	1.10
Vapour Pressure	0.6 hPa @ 20 °C
Vapour Density (Air=1)	2.7
Evaporation Rate	4.3 (CCl4 = 1)
Viscosity	2.14 mPa @ 20 °C
Volatile Component	100%
Partition Coefficient: n-octanol/water	Log P(o/w): -1.35.
Flash Point	95 °C (O.C.)
Flammability	Combustible.
Auto-Ignition Temperature	300 °C
Flammable Limits - Lower	1.8 vol%
Flammable Limits - Upper	63 vol%
Molecular Weight	78.13
Other Information	Taste: Onion or garlic-like.

SECTION 10 STABILITY AND REACTIVITY

Chemical Stability	Stable under ordinary conditions of use and storage. Hygroscopic
Conditions to Avoid	Heat, flames, ignition sources and incompatibles.
Incompatible Materials	Strong oxidisers, strong acids, acylhalides, arylhalides, bromobenzoyl acetanilide, magnesium perchlorate, perchloric acid and sodium hydroxide

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Hazardous Decomposition Products

Upon heating above 100C (212F), sulfur dioxide is evolved from this substance. Hazardous thermo-oxidative degradation products from DMSO include formaldehyde, methyl mercaptan, carbon dioxide, carbon monoxide and sulfur dioxide.

Hazardous Polymerization

Will not occur.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute Toxicity - Oral

LD50 (rat): 14500 mg/kg.

Acute Toxicity - Dermal

LD50 (rabbit): >5000 mg/kg.

Ingestion

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. May cause abdominal pain, drowsiness, chills and chest pains.

Inhalation

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. May cause allergic reaction in sensitive individuals

Skin

Causes irritation to skin. Symptoms include redness, itching, and pain. May cause scaling, Readily absorbed through the skin. Garlic-like taste and odor may develop on the breath and skin. Transient disturbances of color vision, photophobia, headache, diarrhea, and dermatitis may result from skin applications. A good solvent; may result in the increased skin absorption of other more toxic materials.

Eye

Causes irritation, redness, and pain. May cause blurred vision

Carcinogenicity

Not listed in the IARC Monographs

Reproductive Toxicity

Foetal development: Experimental effects on animals: (rat/oral route): 1000 mg/kg.

Chronic Effects

Absorption may affect the blood, Repeated skin application may cause scaling dermatitis. Repeated oral doses may effect the liver and kidneys.

Mutagenicity

No evidence of mutagenic effects.

SECTION 12 ECOLOGICAL INFORMATION

No ecological problems are to be expected when the product is handled and used with due care and attention.

Persistence and Degradability

Abiotic degradation: Rapid degradation. (air)
Biologic degradation: Biodegradation: 3.1%/14 d. Not biodegradable

Environmental Fate

Behaviour in environmental compartments:
Distribution: log P(o/w): -1.35.

Bioaccumulative Potential

No bioaccumulation is to be expected (log P(o/w) <1).

Acute Toxicity - Fish

LC50 (O. mykiss): 38500 mg/l/96 h.

Acute Toxicity - Bacteria

EC50 (Activated sludge): 10-100 mg/l/30 min
EC10 (Ps.putida): 7100 mg/l/16 h.

SECTION 13 DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

SECTION 14 TRANSPORT INFORMATION

Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail

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SECTION 15 REGULATORY INFORMATION

Listed in the Australian Inventory of Chemical Substances (AICS).

Poisons Schedule S6

Other Information Not listed by Worksafe Australia in 'List of Designated Hazardous Substances [NOHSC:10005(1994)]', AGPS, Canberra 1994

SECTION 16 OTHER INFORMATION

Empirical Formula & Structural Formula C₂ H₆ OS

END OF SDS