Dimethyl sulfoxide-D6 (DMSO) (D, 99.9%) (contains 1% v/v TMS)

Novachem Pty Ltd

Chemwatch Hazard Alert Code: **2**

Version No: **2.2**
Safety Data Sheet according to WHS and ADG requirements

Issue Date: **02/08/2018**
Print Date: **02/08/2018**
S.GHS.AUS.EN

SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

Product Identifier

Product name	Dimethyl sulfoxide-D6 (DMSO) (D, 99.9%) (contains 1% v/v TMS)
Chemical Name	dimethyl sulfoxide-D6
Synonyms	DLM-10TA
Proper shipping name	FLAMMABLE LIQUID, N.O.S. (contains dimethyl sulfoxide-D6)
Chemical formula	C2-D6-O-S
Other means of identification	Not Available
CAS number	2206-27-1*

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

Relevant identified uses	For research use

Details of the supplier of the safety data sheet

Registered company name	**Novachem Pty Ltd**
Address	25 Crissane Road, Heidelberg West Victoria 3081 Australia
Telephone	+61384151255
Fax	+61386250088
Website	www.novachem.com.au
Email	novachem@novachem.com.au

Emergency telephone number

Association / Organisation	**Victorian Poisons Information Centre**
Emergency telephone numbers	13 11 26
Other emergency telephone numbers	Not Available

SECTION 2 HAZARDS IDENTIFICATION

Classification of the substance or mixture

COMBUSTIBLE LIQUID, regulated for storage purposes only

Poisons Schedule	S6/S3
Classification [1]	Flammable Liquid Category 3, Skin Corrosion/Irritation Category 2, Eye Irritation Category 2A, Specific target organ toxicity - single exposure Category 3 (respiratory tract irritation)
Legend:	*1. Classified by Chemwatch; 2. Classification drawn from HSIS; 3. Classification drawn from Regulation (EU) No 1272/2008 - Annex VI*

Label elements

Hazard pictogram(s)	
SIGNAL WORD	**WARNING**

Hazard statement(s)

H226	Flammable liquid and vapour.
H315	Causes skin irritation.
H319	Causes serious eye irritation.

Continued...

H335	May cause respiratory irritation.

Precautionary statement(s) Prevention

P210	Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P271	Use only outdoors or in a well-ventilated area.
P240	Ground/bond container and receiving equipment.
P241	Use explosion-proof electrical/ventilating/lighting/intrinsically safe equipment.

Precautionary statement(s) Response

P362	Take off contaminated clothing and wash before reuse.
P370+P378	In case of fire: Use water spray/fog for extinction.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.

Precautionary statement(s) Storage

P403+P235	Store in a well-ventilated place. Keep cool.
P405	Store locked up.

Precautionary statement(s) Disposal

P501	Dispose of contents/container in accordance with local regulations.

SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

Substances

CAS No	%[weight]	Name
2206-27-1	99.9	dimethyl sulfoxide-D6
75-76-3*	0.1	Tetramethylsilane (TMS) 99.9%

Mixtures

See section above for composition of Substances

SECTION 4 FIRST AID MEASURES

Description of first aid measures

Eye Contact	If this product comes in contact with eyes: ▸ Wash out immediately with water. ▸ If irritation continues, seek medical attention. ▸ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.
Skin Contact	If skin or hair contact occurs: ▸ Flush skin and hair with running water (and soap if available). ▸ Seek medical attention in event of irritation.
Inhalation	▸ If fumes, aerosols or combustion products are inhaled remove from contaminated area. ▸ Other measures are usually unnecessary.
Ingestion	▸ Immediately give a glass of water. ▸ First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor. ▸ If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

Indication of any immediate medical attention and special treatment needed

Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically. Mechanical means should be used if it is considered necessary to evacuate the stomach contents; these include gastric lavage after endotracheal intubation. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours.
Treat symptomatically.

SECTION 5 FIREFIGHTING MEASURES

Extinguishing media

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.

Special hazards arising from the substrate or mixture

Fire Incompatibility	▸ Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result

Advice for firefighters

Fire Fighting	▸ Alert Fire Brigade and tell them location and nature of hazard.

Continued...

	▸ May be violently or explosively reactive. ▸ Wear breathing apparatus plus protective gloves. ▸ Prevent, by any means available, spillage from entering drains or water course.
Fire/Explosion Hazard	▸ Liquid and vapour are flammable. ▸ Moderate fire hazard when exposed to heat or flame. ▸ Vapour forms an explosive mixture with air. ▸ Moderate explosion hazard when exposed to heat or flame. Combustion products include: carbon dioxide (CO_2) carbon monoxide (CO) sulfur oxides (SOx) other pyrolysis products typical of burning organic material.
HAZCHEM	•3Y

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

See section 8

Environmental precautions

See section 12

Methods and material for containment and cleaning up

Minor Spills	▸ Remove all ignition sources. ▸ Clean up all spills immediately. ▸ Avoid breathing vapours and contact with skin and eyes. ▸ Control personal contact with the substance, by using protective equipment.
Major Spills	▸ Clear area of personnel and move upwind. ▸ Alert Fire Brigade and tell them location and nature of hazard. ▸ May be violently or explosively reactive. ▸ Wear breathing apparatus plus protective gloves.

Personal Protective Equipment advice is contained in Section 8 of the SDS.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling

Safe handling	▸ Containers, even those that have been emptied, may contain explosive vapours. ▸ Do NOT cut, drill, grind, weld or perform similar operations on or near containers. ▸ Avoid all personal contact, including inhalation. ▸ Wear protective clothing when risk of overexposure occurs. ▸ Use in a well-ventilated area. ▸ Prevent concentration in hollows and sumps.
Other information	▸ Store in original containers in approved flammable liquid storage area. ▸ Store away from incompatible materials in a cool, dry, well-ventilated area. ▸ **DO NOT** store in pits, depressions, basements or areas where vapours may be trapped. ▸ No smoking, naked lights, heat or ignition sources.

Conditions for safe storage, including any incompatibilities

Suitable container	▸ Glass container is suitable for laboratory quantities ▸ Packing as supplied by manufacturer. ▸ Plastic containers may only be used if approved for flammable liquid. ▸ Check that containers are clearly labelled and free from leaks. ▸ For low viscosity materials (i) : Drums and jerry cans must be of the non-removable head type. (ii) : Where a can is to be used as an inner package, the can must have a screwed enclosure. ▸ For materials with a viscosity of at least 2680 cSt. (23 deg. C) ▸ For manufactured product having a viscosity of at least 250 cSt.
Storage incompatibility	▸ Many aprotic (non-hydroxylic) solvents are not inert towards other reagents and care must be taken when using untried combinations of solvents an reagents for the first time. ▸ Some aprotic solvents have a dramatic effect on reaction rates Dimethyl sulfoxide: ▸ reacts violently or explosively with oxidisers, acryl halides, aryl halides and related compounds, non-metallic chlorides and other active halogen compounds, p-bromobenzoyl acetanilide, diborane, boron compounds, iodine pentafluoride, magnesium perchlorate, methyl bromide, perchloric acid, periodic acid, silver fluoride, sodium hydride, potassium permanganate ▸ forms powerfully explosive mixtures with metal salts of oxoacids All blends containing DMSO must be buffered at pH 7-9 before distillation. Prolonged heating above 15 deg.C (302 deg. F) can cause rapid,exothermic decomposition ▸ Sulfoxide ion may react violently or explosively with acyl halides, non-metal halides, benzenesulfonyl halides, cyanuric halides, oxalyl phosphorus trihalides, phosphorus oxyhalides, sulfuryl halides and thionyl halides. These violent reactions may occur as a result of exothermic polymerisation of formaldehyde produced by the interaction of the sulfoxide with reactive halides, and acidic or basic reagents. ▸ Alkyl halides may produce a delayed, vigorous and strongly exothermic reaction. ▸ Strong bases may produce violent ignition. ▸ Avoid reaction with oxidising agents

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Continued...

Control parameters

OCCUPATIONAL EXPOSURE LIMITS (OEL)

INGREDIENT DATA

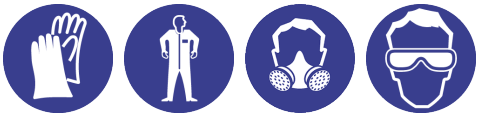
Not Available

EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
dimethyl sulfoxide-D6	Methyl sulfoxide-d6; (Dimethyl-d6-sulfoxide)	150 ppm	290 ppm	1,800 ppm
Tetramethylsilane (TMS) 99.9%	Tetramethylsilane	280 ppm	360 ppm	740 ppm

Ingredient	Original IDLH	Revised IDLH
dimethyl sulfoxide-D6	Not Available	Not Available
Tetramethylsilane (TMS) 99.9%	Not Available	Not Available

Exposure controls

Appropriate engineering controls	Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection. The basic types of engineering controls are: Process controls which involve changing the way a job activity or process is done to reduce the risk. Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.
Personal protection	
Eye and face protection	▸ Safety glasses with side shields ▸ Chemical goggles. ▸ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience.
Skin protection	See Hand protection below
Hands/feet protection	▸ Aprotic solvents may greatly promote the toxic properties of solutes because of their unique ability to penetrate synthetic rubber protective gloves and the skin (butyl rubber gloves are reported to be more satisfactory than others ▸ Neoprene gloves ▸ Wear chemical protective gloves, e.g. PVC. ▸ Wear safety footwear or safety gumboots, e.g. Rubber
Body protection	See Other protection below
Other protection	▸ Overalls. ▸ PVC Apron. ▸ PVC protective suit may be required if exposure severe. ▸ Eyewash unit. · Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity. · For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets). · Non sparking safety or conductive footwear should be considered. Conductive footwear describes a boot or shoe with a sole made from a conductive compound chemically bound to the bottom components, for permanent control to electrically ground the foot an shall dissipate static electricity from the body to reduce the possibility of ignition of volatile compounds.

Respiratory protection

Type A Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Required minimum protection factor	Maximum gas/vapour concentration present in air p.p.m. (by volume)	Half-face Respirator	Full-Face Respirator
up to 10	1000	A-AUS / Class1	-
up to 50	1000	-	A-AUS / Class 1
up to 50	5000	Airline *	-
up to 100	5000	-	A-2
up to 100	10000	-	A-3
100+			Airline**

*** - Continuous Flow ** - Continuous-flow or positive pressure demand**
A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance	Not Available		
Physical state	Liquid	**Relative density (Water = 1)**	1.10

Continued...

Odour	Not Available	**Partition coefficient n-octanol / water**	Not Available
Odour threshold	Not Available	**Auto-ignition temperature (°C)**	301 (574)
pH (as supplied)	Not Applicable	**Decomposition temperature**	100 approx.
Melting point / freezing point (°C)	18.4	**Viscosity (cSt)**	1.21
Initial boiling point and boiling range (°C)	189	**Molecular weight (g/mol)**	84.17
Flash point (°C)	87 (CC)	**Taste**	Not Available
Evaporation rate	1.4 BuAc=1 Not Available	**Explosive properties**	Not Available
Flammability	Combustible.	**Oxidising properties**	Not Available
Upper Explosive Limit (%)	42	**Surface Tension (dyn/cm or mN/m)**	Not Available
Lower Explosive Limit (%)	3.5	**Volatile Component (%vol)**	100 approx.
Vapour pressure (kPa)	0.053	**Gas group**	Not Available
Solubility in water (g/L)	Miscible	**pH as a solution (1%)**	Not Applicable
Vapour density (Air = 1)	2.7	**VOC g/L**	Not Available

SECTION 10 STABILITY AND REACTIVITY

Reactivity	See section 7
Chemical stability	▸ Unstable in the presence of incompatible materials. ▸ Product is considered stable. ▸ Hazardous polymerisation will not occur.
Possibility of hazardous reactions	See section 7
Conditions to avoid	See section 7
Incompatible materials	See section 7
Hazardous decomposition products	See section 5

SECTION 11 TOXICOLOGICAL INFORMATION

Information on toxicological effects

Inhaled	The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting. Inhalation hazard is increased at higher temperatures. Inhalation of vapours of DMSO may cause cough or a burning sensation. High concentrations may cause nausea, vomiting, chills, cramps, headache, dizziness, tiredness, and allergic reactions. Very high doses may be lethal. Repeated exposure may cause liver damage and inflammation of the airway and lung.
Ingestion	Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result. (ICSC13733) The material has **NOT** been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence.
Skin Contact	The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting. Topical exposure to DMSO results in stinging sensation, skin burns, redness, itching, scaly rashes and blisters. There may be "garlic" breath, transient disturbances of colour vision, headache, aversion to light, diarrhoea, numbness, tiredness, chills, chest pains, aching eyes, dark urine from rapid breakdown of the blood, drowsiness and shock. DMSO is commonly used as a carrier for topical preparations of many chemicals including drugs. Contact with DMSO solutions containing toxic material or materials with unknown toxicology should be avoided, as DMSO easily penetrates the skin and may enhance the rate of skin absorption of other skin-permeable substances. Open cuts, abraded or irritated skin should not be exposed to this material Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.
Eye	Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn). Direct contact with high concentrations of DMSO produces irritation with temporary stinging and burning. Lower concentrations do not appear to cause injury and are tolerated well. Application of its full strength to the eye may cause pain, moderate discharge, corneal injury and dilation of the conjunctival blood vessels with bleeding. These effects are reversed within 2 days.
Chronic	Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified by EC Directives using animal models); nevertheless exposure by all routes should be minimised as a matter of course. Topical application for 6 months resulted in bad breath, transient reddening of skin, burning and stinging with moderate inflammation. These reversed with continuation of treatment. Continuous applications under an occluding membrane produced hardening of the skin within a month. There could be eye changes, leading to visual impairment; lung inflammation, liver enlargement, and kidney damage may occur.

Dimethyl sulfoxide-D6 (DMSO) (D, 99.9%) (contains 1% v/v TMS)	**TOXICITY**	**IRRITATION**
	Not Available	Not Available
dimethyl sulfoxide-D6	**TOXICITY**	**IRRITATION**
	Not Available	Not Available

Continued...

Tetramethylsilane (TMS) 99.9%	

TOXICITY	IRRITATION
dermal (rat) LD50: >2000 mg/kg[1]	Not Available
Oral (rat) LD50: >2000 mg/kg[1]	

Legend:	*1. Value obtained from Europe ECHA Registered Substances - Acute toxicity 2.* Value obtained from manufacturer's SDS. Unless otherwise specified data extracted from RTECS - Register of Toxic Effect of chemical Substances*

DIMETHYL SULFOXIDE-D6	Asthma-like symptoms may continue for months or even years after exposure to the material ends. This may be due to a non-allergic condition known as reactive airways dysfunction syndrome (RADS) which can occur after exposure to high levels of highly irritating compound. Main criteria for diagnosing RADS include the absence of previous airways disease in a non-atopic individual, with sudden onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. Other criteria for diagnosis of RADS include a reversible airflow pattern on lung function tests, moderate to severe bronchial hyperreactivity on methacholine challenge testing, and the lack of minimal lymphocytic inflammation, without eosinophilia. DMSO (dimethyl sulfoxide) is absorbed following inhalation, through the skin and after oral intake. Topical application causes mild redness, burning, stinging and itching, which disappear after discontinuation. It is mildly irritating to the eye and may induce tear formation with a brief burning sensation. Long term exposure may cause poor weight gain and changes in the blood and eye. The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis. The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
Dimethyl sulfoxide-D6 (DMSO) (D, 99.9%) (contains 1% v/v TMS) & DIMETHYL SULFOXIDE-D6	Extensive monitoring of humans has shown that DMSO does not affect human kidney function. Although it causes an increase in urine production, no sign of kidney damage or cancer has been found. Repeated skin application can cause occasional skin irritation, garlicky breath and body odour. It is metabolised in the body and excreted in the urine, faeces, through the breath and skin.

Acute Toxicity	⊘	**Carcinogenicity**	⊘
Skin Irritation/Corrosion	✔	**Reproductivity**	⊘
Serious Eye Damage/Irritation	✔	**STOT - Single Exposure**	✔
Respiratory or Skin sensitisation	⊘	**STOT - Repeated Exposure**	⊘
Mutagenicity	⊘	**Aspiration Hazard**	⊘

Legend: ✘ *– Data available but does not fill the criteria for classification*
✔ *– Data available to make classification*
⊘ *– Data Not Available to make classification*

SECTION 12 ECOLOGICAL INFORMATION

Toxicity

Dimethyl sulfoxide-D6 (DMSO) (D, 99.9%) (contains 1% v/v TMS)

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Not Available	Not Available	Not Available	Not Available	Not Available

dimethyl sulfoxide-D6

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
Not Available	Not Available	Not Available	Not Available	Not Available

Tetramethylsilane (TMS) 99.9%

ENDPOINT	TEST DURATION (HR)	SPECIES	VALUE	SOURCE
EC50	48	Crustacea	>2.8mg/L	2
EC50	72	Algae or other aquatic plants	>0.0079mg/L	2
NOEC	72	Algae or other aquatic plants	>=0.0079mg/L	2

Legend:	*Extracted from 1. IUCLID Toxicity Data 2. Europe ECHA Registered Substances - Ecotoxicological Information - Aquatic Toxicity 3. EPIWIN Suite V3.12 (QSAR) - Aquatic Toxicity Data (Estimated) 4. US EPA, Ecotox database - Aquatic Toxicity Data 5. ECETOC Aquatic Hazard Assessment Data 6. NITE (Japan) - Bioconcentration Data 7. METI (Japan) - Bioconcentration Data 8. Vendor Data*

For Dimethyl Sulfoxide (DMSO): Half-life (hr): 7; Melting Point: 18.5 C; Boiling Point: 189 C (at 1,013 hPa); log Kow: –1.35; Vapor Pressure: 0.81 hPa @ 25 C; Henry Law's Constant: 1.17 10+5 mol.kg-1.atm-1.
Environmental Fate: DMSO is a colorless liquid which, in some cases, has a light, characteristic sulfur odor due to traces of the raw material dimethyl sulfide. The main compartments will be soil (60.4%) and water (39.5%) with the remainder partitioning between air (0.0334%) and sediment (0.0723%).
Aquatic Fate: DMSO is able to mix in all proportion with water and with most of the common organic solvents such as alcohols, esters, ketones, ethers, chlorinated solvents and aromatics.
DO NOT discharge into sewer or waterways.

Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
dimethyl sulfoxide-D6	HIGH	HIGH
Tetramethylsilane (TMS) 99.9%	HIGH	HIGH

Bioaccumulative potential

Ingredient	Bioaccumulation

Continued...

dimethyl sulfoxide-D6	LOW (LogKOW = -1.2223)
Tetramethylsilane (TMS) 99.9%	LOW (LogKOW = 3.24)

Mobility in soil

Ingredient	Mobility
dimethyl sulfoxide-D6	LOW (KOC = 4.411)
Tetramethylsilane (TMS) 99.9%	LOW (KOC = 48.64)

SECTION 13 DISPOSAL CONSIDERATIONS

Waste treatment methods

Product / Packaging disposal	In the absence of dissolved oxygen and in the presence of bacteria, a small amount of DMSO can be reduced to DMS (dimethyl sulfide), which produces a nauseating odour at very small concentrations. These specific conditions occur mainly with DMSO effluents in poorly aerated, non sterile storage tanks or in biological waste treatment plant. ▸ With spot quantity of DMSO effluents in drums or storage tank, odour can be prevented or eliminated with 0,3% concentration of castor oil based formulation. ▸ In biological water treatment plant, DMS formation can be inhibited with less than 5 ppm of nitrates such as KNO3. ▸ **DO NOT** allow wash water from cleaning or process equipment to enter drains. ▸ It may be necessary to collect all wash water for treatment before disposal. ▸ In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first. ▸ Where in doubt contact the responsible authority. ▸ Recycle wherever possible. ▸ Consult manufacturer for recycling options or consult local or regional waste management authority for disposal if no suitable treatment or disposal facility can be identified. ▸ Dispose of by: burial in a land-fill specifically licensed to accept chemical and / or pharmaceutical wastes or Incineration in a licensed apparatus (after admixture with suitable combustible material). ▸ Decontaminate empty containers.

SECTION 14 TRANSPORT INFORMATION

Labels Required

	
Marine Pollutant	NO
HAZCHEM	•3Y

Land transport (ADG)

UN number	1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (contains dimethyl sulfoxide-D6)
Transport hazard class(es)	Class: 3 Subrisk: Not Applicable
Packing group	III
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: 223 274 Limited quantity: 5 L

Air transport (ICAO-IATA / DGR)

UN number	1993
UN proper shipping name	Flammable liquid, n.o.s. * (contains dimethyl sulfoxide-D6)
Transport hazard class(es)	ICAO/IATA Class: 3 ICAO / IATA Subrisk: Not Applicable ERG Code: 3L
Packing group	III
Environmental hazard	Not Applicable
Special precautions for user	Special provisions: A3 Cargo Only Packing Instructions: 366 Cargo Only Maximum Qty / Pack: 220 L Passenger and Cargo Packing Instructions: 355 Passenger and Cargo Maximum Qty / Pack: 60 L

Continued...

	Passenger and Cargo Limited Quantity Packing Instructions	Y344
	Passenger and Cargo Limited Maximum Qty / Pack	10 L

Sea transport (IMDG-Code / GGVSee)

UN number	1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (contains dimethyl sulfoxide-D6)
Transport hazard class(es)	IMDG Class: 3 IMDG Subrisk: Not Applicable
Packing group	III
Environmental hazard	Not Applicable
Special precautions for user	EMS Number: F-E , S-E Special provisions: 223 274 955 Limited Quantities: 5 L

Transport in bulk according to Annex II of MARPOL and the IBC code

SOURCE	PRODUCT NAME	POLLUTION CATEGORY	SHIP TYPE
	Nitropropane (60%)/Nitroethane (40%) mixture	Y	3

SECTION 15 REGULATORY INFORMATION

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

DIMETHYL SULFOXIDE-D6(2206-27-1) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Appendix E (Part 2)
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 4
Australia Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP) - Schedule 6

TETRAMETHYLSILANE (TMS) 99.9%(75-76-3*) IS FOUND ON THE FOLLOWING REGULATORY LISTS

Australia Inventory of Chemical Substances (AICS)

National Inventory Status

National Inventory	Status
Australia - AICS	Y
Canada - DSL	Y
Canada - NDSL	N (Tetramethylsilane (TMS) 99.9%; dimethyl sulfoxide-D6)
China - IECSC	Y
Europe - EINEC / ELINCS / NLP	Y
Japan - ENCS	N (dimethyl sulfoxide-D6)
Korea - KECI	Y
New Zealand - NZIoC	Y
Philippines - PICCS	Y
USA - TSCA	N (dimethyl sulfoxide-D6)
Legend:	*Y = All ingredients are on the inventory* *N = Not determined or one or more ingredients are not on the inventory and are not exempt from listing(see specific ingredients in brackets)*

SECTION 16 OTHER INFORMATION

Revision Date	02/08/2018
Initial Date	02/08/2018

Other information

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.
The SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

Definitions and abbreviations

PC—TWA: Permissible Concentration-Time Weighted Average
PC—STEL: Permissible Concentration-Short Term Exposure Limit
IARC: International Agency for Research on Cancer
ACGIH: American Conference of Governmental Industrial Hygienists
STEL: Short Term Exposure Limit
TEEL: Temporary Emergency Exposure Limit。
IDLH: Immediately Dangerous to Life or Health Concentrations
OSF: Odour Safety Factor

Continued...

NOAEL :No Observed Adverse Effect Level
LOAEL: Lowest Observed Adverse Effect Level
TLV: Threshold Limit Value
LOD: Limit Of Detection
OTV: Odour Threshold Value
BCF: BioConcentration Factors
BEI: Biological Exposure Index

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end of SDS