SAFETY DATA SHEET
MANGANESE SULPHATE
REVISION 5, DATE 20 JAN 22

1. IDENTIFICATION

Product Name	**Manganese Sulphate**
Other Names	Manganese sulfate, monohydrate; Manganese sulphate [CAS#7785-87-7]; Sulfuric acid, manganese(2+) salt (1:1), monohydrate
Uses	Feed additive, fertiliser, manufacturing other chemicals, textile dyeing, ceramics, mineral flotation.
Chemical Family	No Data Available
Chemical Formula	MnSO4.H2O
Chemical Name	Manganese sulphate, monohydrate
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)	Not Scheduled

Globally Harmonised System

Hazard Classification			Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories			Acute Toxicity (Oral) - Category 4 Serious Eye Damage/Irritation - Category 1 Specific Target Organ Toxicity (Repeated Exposure) - Category 1 Long-term Hazard To The Aquatic Environment - Category 2
Pictograms			
Signal Word			Danger
Hazard Statements		**H302**	Harmful if swallowed.
		H318	Causes serious eye damage.
		H372	Causes damage to organs through prolonged or repeated exposure.
		H411	Toxic to aquatic life with long lasting effects.
Precautionary Statements	Prevention	**P280**	Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator.
		P260	Do not breathe dusts or mists.
		P273	Avoid release to the environment.
		P270	Do not eat, drink or smoke when using this product.
	Response	**P305 + P351 + P338 + P310**	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTRE/doctor.
		P314	Get medical attention if you feel unwell.
		P391	Collect spillage.
		P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
		P330	Rinse mouth.
	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)

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Manganese sulphate, monohydrate	MnSO4.H2O	10034-96-5	>=98 - 100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth, then drink plenty of water. Do not induce vomiting. Call a Poison Centre or doctor/physician for advice. 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. Immediately call a Poison Centre or doctor/physician for advice.

Skin IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.

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 Get medical advice/attention if you feel unwell. Treat symptomatically. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
*Most important symptoms and effects, both acute and delayed: May be harmful if swallowed. Causes serious eye damage. May cause damage to organs through prolonged or repeated exposure.

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 water spray until well after fire is out. Dike fire-control water for later disposal.

Flammability Conditions Non-combustible; Material does not burn.

Extinguishing Media If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), foam or water spray for extinction.
*Use fire-extinguishing media appropriate for surrounding materials.

Fire and Explosion Hazard Decomposes on heating, emitting toxic fumes.

Hazardous Products of Combustion Fire or heat may produce irritating and/or toxic gases, including Manganese oxides, Sulphur oxides.

Special Fire Fighting Instructions Contain runoff from fire control or dilution water - Runoff may cause pollution. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

Personal Protective Equipment Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Flash Point No Data Available

Lower Explosion Limit No Data Available

Upper Explosion Limit No Data Available

Auto Ignition Temperature No Data Available

Hazchem Code No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Do not touch or walk through spilled material - Slippery when spilt. Avoid accidents, clean up immediately! Avoid dust formation. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	Carefully shovel or sweep up spilled material and place in suitable container. Dispose contaminated material as waste (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. If contamination of sewers or waterways has occurred advise local emergency services.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised/unprotected personnel away. Keep upwind and to higher ground.
Personal Precautionary Measures	Use personal protective equipment as required (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 prolonged or repeated exposure. Avoid dust formation. Do not breathe dust and avoid contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Keep away from heat and sources of ignition - No smoking. Take precautionary measures against static discharges. Avoid release to the environment - Collect spillage (see SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed when not in use - check regularly for spills. Protect from moisture. Keep away from heat and sources of ignition - No smoking. Keep away from food/feedstuffs and incompatible materials (see SECTION 10).
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. For Manganese, dust & compounds: - Safe Work Australia Exposure Standard: TWA = 1 mg/m3 (as Mn). - New Zealand WES for Manganese fume, dust and compounds (as Mn) [Adopted 2018]: TWA = 0.2 mg/m3; TWA = 0.02 mg/m3 (respirable dust); Ototoxin (oto). - NIOSH REL for Manganese compounds and fume (as Mn): TWA = 1 mg/m3; STEL = 3 mg/m3. - OSHA PEL for Manganese compounds and fume (as Mn): 5 mg/m3 Ceiling. - Immediately dangerous to life or health (IDLH) concentration: 500 mg/m3 (as Mn). *Emergency limits (Manganese sulphate): TEEL-1: 9.2 mg/m3; TEEL-2: 15 mg/m3; TEEL-3: 90 mg/m3.
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	- Respiratory protection: Wear respiratory protection in case of inadequate ventilation or an inhalation risk exists. Recommended: Type P1 dust respirator. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Face shield, chemical goggles or safety glasses with side shield protection, as appropriate. - Hand protection: Handle with gloves. Recommended: Wear gloves of impervious material, e.g. Butyl rubber. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Clean clothing or protective clothing should be worn, preferably with an apron. Safety boots in industrial situations is advisory.
Special Hazards Precaustions	No information available.

Work Hygienic Practices	Do not eat, drink or smoke when using this product. Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using. Store protective clothing separately.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Powder or granules
Odour	Odourless
Colour	Pink/violet
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	850 °C
Melting Point	700 °C (anhydrous)
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	2.95 g/cm3
Specific Heat	No Data Available
Molecular Weight	169.02 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
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	Hygroscopic.
Potential for Dust Explosion	No information available.
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	Non-combustible; Material does not burn.
Reactions That Release Gases or Vapours	Decomposes on heating, emitting toxic fumes, including Manganese oxides, Sulphur oxides.

Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	May react violently with hydrogen peroxide.
Chemical Stability	Material is stable under normal conditions.
Conditions to Avoid	Avoid dust formation. Protect from moisture. Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with strong oxidising agents, strong acids; Aluminium, magnesium, powdered metals.
Hazardous Decomposition Products	No decomposition when used as directed. Decomposes on heating, emitting toxic fumes, including Manganese oxides, Sulphur oxides.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

Information on toxicological effects:
- Acute toxicity: Harmful if swallowed.
- Skin corrosion/irritation: May cause skin irritation.
- Eye damage/irritation: Causes serious eye damage.
- Respiratory/skin sensitisation: No information available.
- Germ cell mutagenicity: Not considered to be genotoxic.
- Carcinogenicity: Not considered to be carcinogenic.
- Reproductive toxicity: Not considered likely to have reproductive or developmental toxicity.
- STOT (single exposure): No information available.
- STOT (repeated exposure): Causes damage to organs through prolonged or repeated exposure.
- Aspiration toxicity: No information available.

Information on likely routes of exposure:
- Ingestion: Ingestion may irritate the gastric tract causing nausea, abdominal pain, diarrhoea, lethargy, vomiting and possible coma. Inorganic manganese salts are poorly absorbed through the intestines, but may produce hypoglycaemia and decreased calcium blood levels should absorption occur.
- Eye contact: Causes serious eye damage.
- Skin contact: May cause irritation. May cause cracking of skin, and eczema.
- Inhalation: Inhalation of dust may cause acute irritation to the mucous membrane and upper airways. Symptoms of exposure can include coughing, sneezing with possible nose bleeds, breathing difficulties, and increase the incidence of upper respiratory tract infections (i.e. pneumonia). Absorptions of inorganic manganese salts through the lungs is poor but may occur in chronic poisoning. May cause 24- to 28-hour flu-like illness (metal fume fever) characterised by chills, fever, aching muscles, dryness in the mouth and throat and headache.

Chronic effects: Chronic manganese poisoning (excessive inhalation and ingestion exposure) can result in symptoms including inflammation of the respiratory tract, frequent nose bleeds, headaches, sluggishness, sleepiness, dermatitis, irritability and liver enlargement followed by progressive deterioration of the central nervous system. In severe cases, the illness closely resembles Parkinson's Disease with symptoms including weakness of the legs, increased muscle tension, hand tremor, slurred speech, muscle cramps, spastic gait, mental deterioration, emotional/sexual disturbances, uncontrollable laughter, various blood changes, and manganese psychosis (loss of contact with reality). High incidence of pneumonia has been found in workers exposed to the dust or fume of some manganese compounds. Individuals exposed to dusts and fumes of manganese have been reported to suffer from a much higher incidence of upper respiratory infections and pneumonia than does the general population.

Acute

Ingestion

Acute toxicity (Oral):
- LD50, Rat: 2,150 mg/kg bw. (anhydrous substance).

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (Fathead minnow): 30.6 mg/L (96 h) [anhydrous]. - EC50, Invertebrates (Daphnia magna): 8.3 mg/L (48 h) [anhydrous].
Persistence/Degradability	No information available.
Mobility	The product is soluble in water.
Environmental Fate	Toxic to aquatic life with long lasting effects. Avoid release to the environment.
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	Contaminated packaging: Since emptied containers may retain product residues, follow label warnings even after container is emptied.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Manganese sulphate, monohydrate
Class	No Data Available
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	AU01
Comments	Not regulated as DG when transported by road or rail in packagings that do not incorporate a receptacle exceeding 500 kg(L) or IBCs.

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese sulphate, monohydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese sulphate, monohydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese sulphate, monohydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
ERG	171 Substances (Low to Moderate Hazard)
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese sulphate, monohydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-F
Marine Pollutant	Yes

Air Transport
IATA DGR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Manganese sulphate, monohydrate)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

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)

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)
Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002503 - Additives Process Chemicals and Raw Materials (Subsidiary Hazard) Group Standard 2020

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	232-089-9
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Listed
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	MANSUL0100, MANSUL0400, MANSUL0500, MANSUL0800, MANSUL1000, MANSUL1001, MANSUL1002, MANSUL1003, MANSUL1004, MANSUL1005, MANSUL1006, MANSUL1007, MANSUL1008, MANSUL1009, MANSUL1010, MANSUL1011, MANSUL1012, MANSUL1013, MANSUL1014, MANSUL1015, MANSUL1016, MANSUL1017, MANSUL1018, MANSUL1019, MANSUL1020, MANSUL1021, MANSUL1022, MANSUL1023, MANSUL1024, MANSUL1025, MANSUL1026, MANSUL1027, MANSUL1028, MANSUL1100, MANSUL1200, MANSUL1201, MANSUL1300, MANSUL1301, MANSUL1400, MANSUL1500,

MANSUL1600, MANSUL1605, MANSUL1610, MANSUL1615, MANSUL1620, MANSUL1700, MANSUL1800, MANSUL1801, MANSUL1802, MANSUL1803, MANSUL1804, MANSUL1805, MANSUL1806, MANSUL1807, MANSUL1808, MANSUL1809, MANSUL1810, MANSUL1811, MANSUL1812, MANSUL1813, MANSUL1814, MANSUL1815, MANSUL1816, MANSUL1817, MANSUL1818, MANSUL1819, MANSUL1820, MANSUL1821, MANSUL1822, MANSUL1823, MANSUL1824, MANSUL1825, MANSUL1826, MANSUL1850, MANSUL1855, MANSUL1900, MANSUL1950, MANSUL2000, MANSUL2001, MANSUL2100, MANSUL2200, MANSUL2300, MANSUL2301, MANSUL2400, MANSUL2500, MANSUL2501, MANSUL2502, MANSUL2600, MANSUL2601, MANSUL2602, MANSUL2603, MANSUL2604, MANSUL2605, MANSUL2606, MANSUL2607, MANSUL2608, MANSUL2609, MANSUL2610, MANSUL2611, MANSUL2612, MANSUL2613, MANSUL2614, MANSUL2700, MANSUL2800, MANSUL3000, MANSUL3001, MANSUL3002, MANSUL3003, MANSUL3004, MANSUL3100, MANSUL3101, MANSUL3102, MANSUL3103, MANSUL3104, MANSUL3105, MANSUL3106, MANSUL3107, MANSUL3108, MANSUL3109, MANSUL3110, MANSUL3111, MANSUL3112, MANSUL3113, MANSUL3114, MANSUL3115, MANSUL3116, MANSUL3117, MANSUL3118, MANSUL3119, MANSUL3120, MANSUL3121, MANSUL3122, MANSUL3123, MANSUL3124, MANSUL3125, MANSUL3126, MANSUL3127, MANSUL3128, MANSUL3129, MANSUL3130, MANSUL3131, MANSUL3132, MANSUL3133, MANSUL3134, MANSUL3135, MANSUL3136, MANSUL3137, MANSUL3138, MANSUL3139, MANSUL3140, MANSUL3141, MANSUL3142, MANSUL3200, MANSUL3201, MANSUL3202, MANSUL3300, MANSUL3301, MANSUL3400, MANSUL3500, MANSUL3501, MANSUL3502, MANSUL3503, MANSUL3600, MANSUL3700, MANSUL3800, MANSUL4000, MANSUL4001, MANSUL4002, MANSUL4003, MANSUL4100, MANSUL4200, MANSUL4300, MANSUL4400, MANSUL4500, MANSUL4501, MANSUL4600, MANSUL4650, MANSUL4660, MANSUL4661, MANSUL4700, MANSUL4750, MANSUL4751, MANSUL4752, MANSUL4800, MANSUL4900, MANSUL5000, MANSUL5001, MANSUL5002, MANSUL5003, MANSUL5010, MANSUL5100, MANSUL5300, MANSUL5301, MANSUL5302, MANSUL5305, MANSUL5500, MANSUL5501, MANSUL5502, MANSUL5503, MANSUL5600, MANSUL5700, MANSUL5800, MANSUL5900, MANSUL6000, MANSUL6001, MANSUL6100, MANSUL6300, MANSUL6400, MANSUL6500, MANSUL6501, MANSUL6502, MANSUL6550, MANSUL6551, MANSUL6570, MANSUL6571, MANSUL6600, MANSUL6601, MANSUL6605, MANSUL6700, MANSUL6800, MANSUL7000, MANSUL7001, MANSUL7500, MANSUL7900, MANSUL8000, MANSUL8001, MANSUL8002, MANSUL8003, MANSUL8004, MANSUL8005, MANSUL8006, MANSUL8007, MANSUL8008, MANSUL8009, MANSUL8010, MANSUL8011, MANSUL8012, MANSUL8013, MANSUL8050, MANSUL8051, MANSUL8055, MANSUL8060, MANSUL8061, MANSUL8070, MANSUL8071, MANSUL8072, MANSUL8075, MANSUL8076, MANSUL8080, MANSUL8081, MANSUL8082, MANSUL8083, MANSUL8084, MANSUL8086, MANSUL8087, MANSUL8088, MANSUL8089, MANSUL8090, MANSUL8091, MANSUL8092, MANSUL8093, MANSUL8095, MANSUL8096, MANSUL8098, MANSUL8100, MANSUL8105, MANSUL8800, MANSUL8850, MANSUL8851, MANSUL8860, MANSUL9000, MANSUL9001, MANSUL9002, MANSUL9003, MANSUL9004, MANSUL9010, MANSUL9011, MANSUL9012, MANSUL9013, MANSUL9100, MANSUL9300, MANSUL9400, MANSUL9500, MANSUL9501, MANSUL9502, MANSUL9600, MANSUL9601, MANSUL9602, MANSUL9700, MANSUL9701, MANSUL9702, MANSUL9800, MANSUL9900, MANSUP1000, MANSUP4100, MANSUP5000, MANSUP6200, MANSUP6201, MANSUP6202, MANSUP9000

Revision 5

Revision Date 20 Jan 2022

Key/Legend

< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm^2 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/cm^3 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/m^3 Kilograms per Cubic Metre
lb Pound
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
m^3 Cubic Metre

mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m^3 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 Heath 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