1. IDENTIFICATION

Product Name	**Sodium Molybdate Dihydrate**
Other Names	Disodium molybdate [CAS#7631-95-0]
Uses	Water treatment; Automotive industry; Corrosion inhibitor; Metal productions; Micronutrient fertiliser.
Chemical Family	No Data Available
Chemical Formula	Na2MoO4.2H2O
Chemical Name	Molybdate, disodium, dihydrate
Product Description	No Data Available

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty 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	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Signal Word	None

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)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Sodium molybdate, dihydrate	Na2MoO4.2H2O	10102-40-6	<=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. If vomiting occurs, keep head lower than hips to prevent aspiration. 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 or consult an ophthalmologist immediately.
Skin	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and shoes and wash 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. Apply resuscitation if victim is not breathing - Administer oxygen if breathing is difficult.
Advice to Doctor	Treat symptomatically and supportively.
Medical Conditions Aggravated by Exposure	Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

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.
Flammability Conditions	Non-combustible; Material does not burn.
Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Fire and Explosion Hazard	Not considered to be a fire hazard. Not considered to be an explosion hazard.
Hazardous Products of Combustion	Toxic metal fumes may form when heated to decomposition. Under fire conditions hazardous decomposition products formed include Sodium oxides, Molybdenum oxides.
Special Fire Fighting Instructions	Contain runoff from fire control water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) and chemical splash suit. SCBA and structural firefighter's uniform may 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. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	Collect material and place in suitable clean, dry containers for reclamation or later disposal (see SECTION 13). Vacuum wet to avoid dust generation.
Containment	Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
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 generating dust. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from physical damage. Protect from moisture. Keep away from excess heat. Keep away from food/feedstuffs, beverages and incompatible materials (see SECTION 10).
Container	Keep in the original container. Containers of this material may be hazardous when empty since they retain product residues; observe all warnings and precautions listed for the product.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. - Safe Work Australia Exposure Standard for Molybdenum, insoluble compounds (as Mo): TWA = 10 mg/m3. - Safe Work Australia Exposure Standard for Molybdenum, soluble compounds (as Mo): TWA = 5 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 below the airborne exposure limits. 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 if an inhalation risk exists. Recommended: Dust protection mask (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Tightly sealed goggles. - Hand protection: Handle with gloves. Recommended: Protective gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Protective work clothing, e.g. boots, lab coat, apron or coveralls, as appropriate.
Special Hazards Precaustions	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 work. Take off contaminated clothing and wash before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystals, scales or flakes
Odour	Odourless
Colour	White
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	686 - 687 °C
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	3.78 g/cm3
Specific Heat	No Data Available
Molecular Weight	241.95 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	0 % @ 21 °C
VOC Volume	No Data Available
Additional Characteristics	No information available.
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	Toxic metal fumes may form when heated to decomposition. Under fire conditions hazardous decomposition products formed include Sodium oxides, Molybdenum oxides.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

Explodes on contact with molten magnesium. Violent reaction with interhalogens (e.g. bromine pentafluoride; chlorine

General Information	trifluoride). Incandescent reaction with hot sodium, potassium or lithium.
Chemical Stability	Stable under recommended storage conditions.
Conditions to Avoid	Avoid generating dust. Keep away from excess heat.
Materials to Avoid	Incompatible/reactive with strong oxidizing agents, strong reducing agents, alkali metals, most common metals.
Hazardous Decomposition Products	Toxic metal fumes may form when heated to decomposition. Under fire conditions hazardous decomposition products formed include Sodium oxides, Molybdenum oxides.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

- Acute toxicity: Based on available data, the classification criteria are not met. Swallowing can result in nausea, vomiting, diarrhoea and abdominal pain.
- Skin corrosion/irritation: Not irritating to skin (Rabbits) [CAS#7631-95-0; OECD TG 404]. Thus, chemical is considered to be non-irritant.
- Eye damage/irritation: Not irritating to eyes (Rabbits) [CAS#7631-95-0; OECD TG 405]. Thus, chemical is considered to be non-irritant. Exposure to the dust may cause discomfort/physical irritation to the eyes.
- Respiratory/skin sensitisation: Not sensitizing (Guinea pigs) [CAS#7631-95-0; OECD TG 406]. Since the test animals failed to induce any cutaneous reaction, the test chemical is considered as not sensitizing.
- Germ cell mutagenicity: Non-mutagenic. On the basis of a weight of evidence approach of read across analogues, test chemical Disodium molybdate (CAS#7631-95-0) was reported to be non-mutagenic.
was reported to be non-mutagenic.
- Carcinogenicity: Not listed as carcinogenic according to the International Agency for Research on Cancer (IARC).
- Reproductive toxicity: Non-reprotoxic [CAS#7631-95-0; OECD TG 416].
- STOT (single exposure): Breathing in dust may result in respiratory irritation, coughing, shortness of breath.
- STOT (repeated exposure): High levels of molybdenum can cause joint problems in the hands and feet with pain and lameness. Molybdenum compounds can also cause liver changes with elevated levels of enzymes and cause over-activity of the thyroid gland. A generalised feeling of unwellness can occur, with tiredness, weakness, diarrhoea, loss of appetite and weight.
- Aspiration toxicity: Not an aspiration hazard.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat (male/female): 4,233 mg/kg bw. [OECD TG 401].
Other	Acute toxicity (Dermal): - LD50, Rat (male/female): >2,000 mg/kg bw. [OECD TG 402].
Inhalation	Acute toxicity (Inhalation): - LC50, Rat (male/female): >1.93 mg/l [OECD TG 403].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (Oncorhynchus mykiss): 1,320 mg/l (96 h) [CAS#10102-40-6; OECD TG 203]. - LC50, Fish (Pimephales Promelas): 609.1 mg/l (96 h) [CAS#10102-40-6; OECD TG 203]. - EC50, Crustacea (Daphnia magna): 2,847.5 mg/l (48 h) [CAS#7631-95-0; ASTM guideline]. - EC50, Algae/aquatic plants (Pseudokirchneriella subcapitata): >218 mg/l (72 h) [CAS#10102-40-6; OECD TG 201].
Persistence/Degradability	Biodegradation is not applicable to metals/inorganic substances.
Mobility	No information available.
Environmental Fate	Slightly hazardous for water - Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Bioaccumulation Potential	Non-bioaccumulative.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	The generation of waste should be avoided or minimised wherever possible. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility and in accordance with local/regional/national regulations. Processing, use or contamination of this product may change the waste management options.
Special Precautions for Land Fill	Contaminated packaging: Containers of this material may be hazardous when empty since they retain product residues - Observe all warnings and precautions listed for the product. Do not reuse container.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Sodium molybdate, dihydate
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 (Malaysia)
ADR Code

Proper Shipping Name	Sodium molybdate, dihydate
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	Sodium molybdate, dihydate
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	Sodium molybdate, dihydate

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	Sodium molybdate, dihydate
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	Sodium molybdate, dihydate
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)

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	Not Hazardous

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	600-158-6
Europe (REACh)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes

SOMOLY0100, SOMOLY0300, SOMOLY0400, SOMOLY0500, SOMOLY0700, SOMOLY0701, SOMOLY0702, SOMOLY0703, SOMOLY0800, SOMOLY0801, SOMOLY0802, SOMOLY0803, SOMOLY0804, SOMOLY0805, SOMOLY0806, SOMOLY0807, SOMOLY0808, SOMOLY0809, SOMOLY0810, SOMOLY0811, SOMOLY0812, SOMOLY0813, SOMOLY0814, SOMOLY0815, SOMOLY0816, SOMOLY0817, SOMOLY0818, SOMOLY0819, SOMOLY0820, SOMOLY0821, SOMOLY0822, SOMOLY0823, SOMOLY0824, SOMOLY0825, SOMOLY0826, SOMOLY0827, SOMOLY0828, SOMOLY0829, SOMOLY0830, SOMOLY0900, SOMOLY0901, SOMOLY1000, SOMOLY1001, SOMOLY1002, SOMOLY1003, SOMOLY1004, SOMOLY1005, SOMOLY1006, SOMOLY1007, SOMOLY1008, SOMOLY1009, SOMOLY1010, SOMOLY1011, SOMOLY1012, SOMOLY1013, SOMOLY1014, SOMOLY1015, SOMOLY1016, SOMOLY1017, SOMOLY1018, SOMOLY1019, SOMOLY1020, SOMOLY1021, SOMOLY1100, SOMOLY1101, SOMOLY1300, SOMOLY1301, SOMOLY1500, SOMOLY1600, SOMOLY1700, SOMOLY1800, SOMOLY1801, SOMOLY1802, SOMOLY1803, SOMOLY1804, SOMOLY1805, SOMOLY1806, SOMOLY1807, SOMOLY1808, SOMOLY1809, SOMOLY1810, SOMOLY1811, SOMOLY1812, SOMOLY1813, SOMOLY1814, SOMOLY1900, SOMOLY2000, SOMOLY2100, SOMOLY2200, SOMOLY2500, SOMOLY2501, SOMOLY2900, SOMOLY3000, SOMOLY3001, SOMOLY3100, SOMOLY3101, SOMOLY3500, SOMOLY4000, SOMOLY4001, SOMOLY4002, SOMOLY4100, SOMOLY4101, SOMOLY4200, SOMOLY4300, SOMOLY4500, SOMOLY5000, SOMOLY5001, SOMOLY5500, SOMOLY6100, SOMOLY6101, SOMOLY6500, SOMOLY6600, SOMOLY6700, SOMOLY6701, SOMOLY7100, SOMOLY7250, SOMOLY7300, SOMOLY7400, SOMOLY7500, SOMOLY7600, SOMOLY7700, SOMOLY7701, SOMOLY7800, SOMOLY8000, SOMOLY8100, SOMOLY8600, SOMOLY9000, SOMOLY9100, SOMOLY9500, SOMOLY9600, SOMOLY9601, SOMOLY9700, SOMOLY9900

Revision

4

Revision Date

19 Mar 2021

Key/Legend

< Less Than
> Greater Than
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
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 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