SAFETY DATA SHEET
SODIUM SELENATE
REVISION 6, DATE 21 MAR 2023

1. IDENTIFICATION

Product Name	**Sodium Selenate**
Other Names	Disodium selenate
Uses	Industrial use; Food/feedstuff additives.
Chemical Family	No Data Available
Chemical Formula	Na2O4Se
Chemical Name	Selenic acid, disodium salt
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	Suite 13A.03, Menara Summit Persiaran Kewajipan USJ1 47600 UEP Subang Jaya Selangor, 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	Australia – Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
National Poison Centre	Malaysia	+60-4-6536-999
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 7

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 2

Acute Toxicity (Inhalation) - Category 2

Skin Corrosion/Irritation - Category 2

Specific Target Organ Toxicity (Repeated Exposure) - Category 2

Acute Hazard To The Aquatic Environment - Category 1

Long-term Hazard To The Aquatic Environment - Category 1

Pictograms

Signal Word

Danger

Hazard Statements

H300 + H330	Fatal if swallowed or if inhaled.
H315	Causes skin irritation.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Prevention	**P260**	Do not breathe dusts or mists.
	P284	Wear respiratory protection.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P273	Avoid release to the environment.
	P270	Do not eat, drink or smoke when using this product.
	P271	Use only outdoors or in a well-ventilated area.
Response	**P304 + P340**	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
	P310	Immediately call a POISON CENTER or doctor.
	P330	Rinse mouth.
	P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
	P391	Collect spillage.
	P332 + P313	If skin irritation occurs: Get medical attention.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
Storage	**P403 + P233**	Store in a well-ventilated place. Keep container tightly closed.
	P405	Store locked up.
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

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
Sodium selenate	Na2O4Se	13410-01-0	>=99 - 100 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor (at once). Take victim immediately to hospital. Urgent hospital treatment is likely to be needed!
Eye	IF IN EYES: Protect unharmed eye! 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 20 minutes. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately flush skin and hair with running water for at least 20 minutes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. *For minor skin contact, avoid spreading material on unaffected skin.
Inhaled	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a Poison Centre or doctor/physician for advice. If unconscious, place in recovery position and get medical attention immediately! Give artificial respiration if victim is not breathing. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Administer oxygen if breathing is difficult.
Advice to Doctor	Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. Show this safety data sheet (SDS) to the doctor in attendance. Do not leave the victim unattended. Keep victim calm and warm. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. *Most important symptoms and effects, both acute and delayed: Fatal if swallowed or if inhaled. Ingestion may provoke stomach/intestinal disorders. Inhalation may provoke shortness of breathe, asthma. Causes skin irritation, redness. In case of eye contact, may cause excessive lachrymation. 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; do not scatter the material. Do not get water inside containers.
Flammability Conditions	Non-combustible; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Extinguishing Media	If material is involved in a fire, use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Do not use high volume water jet.
Fire and Explosion Hazard	Upon heating, toxic fumes are formed. Not expected to form explosive dust-air mixtures. Fire or heat will produce irritating, corrosive and/or toxic gases, including metal oxides.

Hazardous Products of Combustion	
Special Fire Fighting Instructions	Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. 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). Wear chemical protective clothing - It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.
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	2X

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation - Ventilate enclosed spaces before entering. Do not touch or walk through spilled material. Avoid generating dust. Do not breathe dust/mist/vapours and avoid contact with eyes, skin and clothing.
Clean Up Procedures	Collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Cover with plastic sheet to prevent spreading.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses. If the product contaminates rivers and lakes or drains, inform respective authorities.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away. Keep upwind and to higher ground. *Large spill: Immediately contact Police or Fire Brigade; Consider initial downwind evacuation of areas within at least 250 m.
Personal Precautionary Measures	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing (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 - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Avoid generating dust. Do not breathe dust/mist/vapours and avoid contact with eyes, skin and clothing. Do not ingest. Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator (see SECTION 8). Avoid release to the environment - Collect spillage (see SETION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Keep away from heat and sources of ignition - No smoking. Keep away from foodstuffs and incompatible materials (see SECTION 10). Prevent unauthorised access. Store locked up.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. For Selenium compounds (as Se): - Safe work Australia Exposure Standard: TWA = 0.1 mg/m3

	- New Zealand Workplace Exposure Standard [Adopted 2023]: TWA = 0.02 mg/m3; Skin absorption (skin). - NIOSH REL/OSHA PEL: TWA = 0.2 mg/m3 - Immediately dangerous to life of health (IDLH) concentration: 1 mg/m3 (as Se)
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	Provide appropriate exhaust ventilation at places where dust is formed. Handle only in a place equipped with local exhaust (or other appropriate exhaust).
Personal Protection Equipment	- Respiratory protection: When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. Recommended: Suitable mask with particle filter P3 (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Wear safety glasses with side shields or goggles. - Hand protection: Wear protective gloves. Recommended: Long sleeve gloves, e.g. Nitrile rubber (0.12 mm), PVC (1.1 mm), Neoprene (0.35 mm); Break through time: >480 min. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Dust impervious protective suit; Footwear protecting against chemicals.
Special Hazards Precaustions	Electrical installations/working materials must comply with the technological safety standards.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Smoking, eating and drinking should be prohibited in the application area. Wash hands before breaks and immediately after handling the product. Take off contaminated clothing and wash it before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystalline
Odour	Odourless
Colour	Colourless
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Completely soluble in water (585 g/l) 20°C
Specific Gravity	3.098
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	3.098 g/cm3
Specific Heat	No Data Available
Molecular Weight	188.94 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	No information available.
Potential for Dust Explosion	Not expected to form explosive dust-air mixtures.
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; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Reactions That Release Gases or Vapours	Fire or heat will produce irritating, corrosive and/or toxic gases, including metal oxides.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable under recommended storage conditions.
Conditions to Avoid	Avoid generating dust. To maintain product quality, do not store in heat or direct sunlight.
Materials to Avoid	Incompatible/reactive with oxidising agents.
Hazardous Decomposition Products	No decomposition if stored and applied as directed. Fire or heat will produce irritating, corrosive and/or toxic gases, including metal oxides.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

Information on toxicological effects:
- Acute toxicity: Fatal if swallowed or if inhaled.
- Skin corrosion/irritation: Causes skin irritation. Skin irritation (RhE) [OECD Test Guideline 439].
- Serious eye damage/irritation: No eye irritation (Rabbit) [OECD Test Guideline 405]. Not classified due to data which are conclusive although insufficient for classification. Based on read across from structural related substance.
- Respiratory/skin sensitisation: Not a skin sensitiser (Mouse) [OECD Test Guideline 429]. Not classified due to data which are conclusive although insufficient for classification. Based on read across from structural related substance
- Germ cell mutagenicity: Negative, Chromosome aberration test in vitro (Human lymphocytes). Negative, chromosome aberration assay (Intraperitoneal injection, mice). Not classified due to data which are conclusive although insufficient for classification. Based on read across from structural related substance.
- Carcinogenicity: No information available.
- Reproductive toxicity: Not classified due to data which are conclusive although insufficient for classification. Based on read across from structural related substance.
- STOT (single exposure): No information available.
- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure. Based on read across from structural related substance.
- Aspiration toxicity: No information available.

Information on likely routes of exposure:
- Ingestion: Fatal if swallowed. Ingestion may provoke stomach/intestinal disorders.
- Eye contact: May cause excessive lachrymation.

- Skin contact: Causes skin irritation, redness.
- Inhalation: Fatal if inhaled. Inhalation may provoke shortness of breath, asthma.
Chronic effects: May cause damage to organs through prolonged or repeated exposure.

Acute

Ingestion Acute toxicity (Oral):
- LD50, Rat: 7 mg/kg [OECD Test Guideline 401; Supplier's SDS].

Inhalation Acute toxicity (Inhalation):
- LC50, Rat: 0.052 mg/l (4 h) dust/mist [OECD Test Guideline 403; Supplier's SDS].

Chronic

Ingestion Repeated dose toxicity (Oral):
- NOAEL, Rat (drinking water): 0.96 mg/kg [OECD Test Guideline 408; Supplier's SDS].

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity Acute aquatic toxicity:
- LC50, Fish (Pimephales promelas): 4,929 ug/l (96 h) [flow-through test].
- EC50, Crustacea (Daphnia magna): 1.3 mg/l (48 h) [Fresh water].
- EC50, Algae/aquatic plants (Chlamydomonas reinhardtii): 0.58 mg/l (96 h) [Marine water].
Chronic aquatic toxicity:
- NOEC, Fish (Lepomis macrochirus): 0.26 mg/l (258 d) [Fresh water].
- NOEC, Crustacea (Daphnia magna): 0.167 mg/l (28 d) [OECD Test Guideline 211].
*Based on read across from structural related substance.

Persistence/Degradability No information available.

Mobility No information available.

Environmental Fate Very toxic to aquatic life with long lasting effects - Avoid release to the environment. The product should not be allowed to enter drains, water courses or the soil.

Bioaccumulation Potential No information available.

Environmental Impact No Data Available

13. DISPOSAL CONSIDERATIONS

General Information Dispose of contents/container as hazardous waste in compliance with local and national regulations. Send to a licensed waste management company. Do not contaminate ponds, waterways or ditches with chemical or used container.

Special Precautions for Land Fill Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	SELENATES
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	151 Substances - Toxic (Non-Combustible)

UN Number	2630
Hazchem	2X
Pack Group	I
Special Provision	No Data Available

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	SELENATES
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	151 Substances - Toxic (Non-Combustible)
UN Number	2630
Hazchem	2X
Pack Group	I
Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	SELENATES
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
EPG	151 Substances - Toxic (Non-Combustible)
UN Number	2630
Hazchem	2X
Pack Group	I
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	SELENATES
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
ERG	151 Substances - Toxic (Non-Combustible)
UN Number	2630
Hazchem	2X
Pack Group	I
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	SELENATES
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	2630
Hazchem	2X
Pack Group	I
Special Provision	No Data Available
EMS	F-A, S-A

Marine Pollutant	Yes

Air Transport
IATA DGR

Proper Shipping Name	SELENATES
Class	6.1 Toxic and Infectious Substances - Toxic Substances
Subsidiary Risk(s)	No Data Available
UN Number	2630
Hazchem	2X
Pack Group	I
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	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	SELENIUM COMPOUNDS
Poisons Schedule (Aust)	Schedule 7

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

Approval Code	HSR002508 - Additives Process Chemicals and Raw Materials (Acutely Toxic) Group Standard 2020

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	236-501-8
Europe (REACh)	01-2120772103-63-
Japan (ENCS/METI)	Listed
Korea (KECI)	Listed
Malaysia (List of Classified Substances)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed

Taiwan (TCSI)	Listed
USA (TSCA)	Listed
Mexico (INSQ)	Not Determined

16. OTHER INFORMATION

Related Product Codes	SOSELA0100, SOSELA1000, SOSELA1001, SOSELA1002, SOSELA1003, SOSELA1004, SOSELA1005, SOSELA1006, SOSELA1007, SOSELA1008, SOSELA1100, SOSELA1200, SOSELA1300, SOSELA1400, SOSELA1500, SOSELA1550, SOSELA1600, SOSELA2500, SOSELA3000, SOSELA4000, SOSELA5000, SOSELA5500, SOSELA5600, SOSELA5800, SOSELA9600
Revision	6
Revision Date	21 Mar 2023
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