1. IDENTIFICATION

Product Name	**Oxalic acid, dihydrate**
Other Names	No Data Available
Uses	There are no uses advised against.
Chemical Family	No Data Available
Chemical Formula	C2H2O4.2H2O
Chemical Name	Ethanedioic acid, 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) Schedule 6

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	
		Acute Toxicity (Dermal) - Category 4	
		Serious Eye Damage/Irritation - Category 1	
Pictograms			
Signal Word		Danger	
Hazard Statements		**H302**	Harmful if swallowed.
		H312	Harmful in contact with skin.
		H318	Causes serious eye damage.
Precautionary Statements	Prevention	**P270**	Do not eat, drink or smoke when using this product.
		P280	Wear protective gloves/protective clothing/eye protection/face protection.
	Response	**P312**	Call a POISON CENTER or doctor/physician if you feel unwell.
		P330	Rinse mouth.
		P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
		P363	Wash contaminated clothing before reuse.
		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.
	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)

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

HSNO Classifications	Health Hazards	**6.1D**	Substances that are acutely toxic - Harmful
		8.3A	Substances that are corrosive to ocular tissue
	Environmental Hazards	**9.3B**	Substances that are ecotoxic to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Oxalic acid, dihydrate	C2H2O4.2H2O	6153-56-6	<=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. Call a Poison Centre or doctor/physician 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. Immediately call a Poison Centre or doctor/physician.
Skin	IF ON SKIN (or hair): Remove material from skin immediately. Wash with plenty of soap and water. Take off contaminated clothing and wash before reuse. Call a Poison Centre or doctor/physician if you feel unwell; 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. Ensure that attending medical personnel are aware of the identity and nature of the product(s) involved, and take precautions to protect themselves.
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.
Flammability Conditions	May burn but does not ignite readily.
Extinguishing Media	Use dry chemical, Carbon dioxide, foam or water spray for extinction. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Fire and Explosion Hazard	Fine dust may form explosive mixtures with air.
Hazardous Products of Combustion	Fire or heat will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide, Formic aid.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may pollute waterways.
Personal Protective Equipment	Wear self-contained breathing apparatus (SCBA) in combination with normal firefighting clothing (fire kit).
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No self-ignition below 400 °C
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources (no smoking, flares, sparks or flames). 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 it into suitable containers for later disposal (see SECTION 13). Keep the material dry if possible.
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud.
Decontamination	Wash away remainder with plenty of water.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away; Keep upwind.
Personal Precautionary Measures	Wear protective gloves/protective clothing/eye protection/face protection; In case of inadequate ventilation, wear respiratory protection (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. Wear protective gloves/protective clothing/eye protection/face protection; In case of inadequate ventilation, wear respiratory protection (see SECTION 8). Keep away from heat and sources of ignition - No smoking.
Storage	Store in a cool, dry and well-ventilated place. Keep container tightly closed. Keep away from heat and sources of ignition - No smoking. Avoid exposure to air and moisture. Keep away from incompatible materials (strong oxidants, strong bases, Silver), food and feedstuffs.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For OXALIC ACID (CAS No. 144-62-7): - Safe Work Australia Exposure Standard: TWA = 1 mg/m3; STEL = 2 mg/m3. - New Zealand WES: TWA = 1 mg/m3; STEL = 2 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: In case of inadequate ventilation, wear respiratory protection. Recommended filter type: A/P (organic vapour + particulate). Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Tight fitting goggles with side shields, or wide vision full goggles. Hand protection: Wear protective gloves. Recommended: Nitrile, neoprene, natural rubber, polyvinyl. Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Standard work clothes, long pants, long sleeves, coveralls.
Special Hazards Precaustions	No information available.
Work Hygienic Practices	Do NOT wear contact lenses when handling this product. Always wash hands before smoking, eating, drinking or using the toilet. Wash contaminated clothing and other protective equipment before storage or re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Crystals or powder
Odour	Odourless
Colour	Uncoloured or white
pH	~0.7 50 g/L
Vapour Pressure	0.0312 Pa (@ 25 °C)
Relative Vapour Density	No Data Available
Boiling Point	>160 °C (Sublimes)
Melting Point	>160 °C (Sublimes)
Freezing Point	No Data Available
Solubility	108 g/L water 25°C
Specific Gravity	0.813 [EU A.3 method]
Flash Point	No Data Available
Auto Ignition Temp	No self-ignition below 400 °C
Evaporation Rate	No Data Available
Bulk Density	No Data Available

Corrosion Rate	No Data Available
Decomposition Temperature	>160 °C
Density	No Data Available
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	-1.7 (23 °C)
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	Fine dust may form explosive mixtures with air.
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	Reacts violently with oxidants causing fire and explosion hazard. Reacts with Silver compounds, forming explosive products.
Properties That May Initiate or Contribute to Fire Intensity	May burn but does not ignite readily.
Reactions That Release Gases or Vapours	Fire or heat will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide, Formic acid.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	The substance in solution is a medium-strong acid; Reacts vigorously with strong bases. Reacts violently with oxidants causing fire and explosion hazard. Reacts with Silver compounds, forming explosive products.
Chemical Stability	Under normal conditions of use and storage, Oxalic acid is stable.
Conditions to Avoid	Avoid generating dust. Avoid exposure to air and moisture. Keep away from heat and sources of ignition.
Materials to Avoid	Incompatible/reactive with strong bases, oxidising agents, metals (Silver), Ammonia, halogens.
Hazardous Decomposition Products	Fire or heat will produce irritating, toxic and/or corrosive gases, including Carbon monoxide, Carbon dioxide, Formic aid.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	Acute toxicity: Harmful if swallowed and in contact with skin. Skin corrosion/irritation: May cause skin irritation (The substance in solution is a medium-strong acid). Eye damage/irritation: Causes serious eye damage. Respiratory/skin sensitisation: Oxalic acid is not a skin sensitiser [OECD Guideline 429]. Germ cell mutagenicity: Not considered to be genotoxic. Carcinogenicity: No evidence of carcinogenicity. Reproductive toxicity: Oxalic acid does not show specific reproductive or developmental toxicity. STOT - single exposure: Corrosion and irritant effects of the mouth and digestive tract, skin, eyes and respiratory tract have been reported following exposure to either the solid or concentrated solutions of Oxalic acid. STOT - repeated exposure: May cause harmful cumulative effects (reduced thyroid weights/function, renal toxicity,

	kidney damage/stone formation) following repeated oral exposure (Not considered relevant for classification). Aspiration toxicity: No information available.
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (Golden orfe): 160 mg/L (48 h). - EC50, Crustacea (Daphnia magna): 137 mg/L (48 h).
Persistence/Degradability	Oxalic acid is readily biodegradable.
Mobility	As Oxalic acid is considered as readily biodegradable, it can be assumed that it will be biodegraded within the STP process, and as a consequence, transfer to the soil compartment is not expected.
Environmental Fate	Prevent entry into drains and waterways.
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 - Must not be disposed together with household garbage.
Special Precautions for Land Fill	Contaminated packaging: After usage, empty the packing completely.

14. TRANSPORT INFORMATION

Land Transport (Australia)
ADG Code

Proper Shipping Name	Oxalic acid, dihydrate
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

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	Oxalic acid, dihydrate
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

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	Oxalic acid, dihydrate
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

Land Transport (United States of America)
US DOT

Proper Shipping Name	Oxalic acid, dihydrate
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

Sea Transport
IMDG Code

Proper Shipping Name	Oxalic acid, dihydrate
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

Air Transport
IATA DGR

Proper Shipping Name	Oxalic acid, dihydrate
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

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)	Schedule 6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR002503

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	205-634-3
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	OXACID1000, OXACID1001, OXACID1002, OXACID1003, OXACID1004, OXACID1005, OXACID1006, OXACID1007, OXACID1008, OXACID1009, OXACID1010, OXACID1011, OXACID1012, OXACID1013, OXACID1014, OXACID1015, OXACID1016, OXACID1017, OXACID1018, OXACID1019, OXACID1020, OXACID1021, OXACID1500, OXACID1501, OXACID1502, OXACID1503, OXACID1510, OXACID1515, OXACID1800, OXACID1801, OXACID1802, OXACID1803, OXACID2000, OXACID2001, OXACID2500, OXACID3000, OXACID3001, OXACID3500, OXACID4000, OXACID4500, OXACID5000, OXACID5001, OXACID5002, OXACID5003, OXACID5004, OXACID5005, OXACID5006, OXACID5007, OXACID5008, OXACID5009, OXACID5010, OXACID5011, OXACID5012, OXACID5013, OXACID5014, OXACID5015, OXACID5016, OXACID5017, OXACID5018, OXACID5019, OXACID5020, OXACID5021, OXACID5022, OXACID5023, OXACID5024, OXACID5025, OXACID5026, OXACID5027, OXACID5028, OXACID5029, OXACID5030, OXACID5031,

	OXACID5032, OXACID5033, OXACID5034, OXACID5035, OXACID5036, OXACID5037, OXACID5038, OXACID5039, OXACID5040, OXACID5500, OXACID6000, OXACID6001, OXACID6002, OXACID7000, OXACID8000, OXACID8200, OXACID8300, OXACID8350, OXACID8400, OXACID8450, OXACID8500, OXACID8501, OXACID8510, OXACID8599, OXACID8600, OXACID8601, OXACID8602, OXACID8700, OXACID8800, OXACID8820, OXACID8850, OXACID8900, OXACID8925, OXACID9000, OXACID9500, OXACID9900
Revision	4
Revision Date	01 Jun 2015
Reason for Issue	Update sds
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