SAFETY DATA SHEET
ZINC SULPHATE, HEPTAHYDRATE
REVISION 4, DATE 20 APR 20

1. IDENTIFICATION

Product Name	**Zinc sulphate, heptahydrate**
Other Names	No Data Available
Uses	Fertiliser additive and animal health product.
Chemical Family	No Data Available
Chemical Formula	ZnSO4.7H2O
Chemical Name	Sulfuric acid, zinc salt (1:1), heptahydrate
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)	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 Serious Eye Damage/Irritation - Category 1 Acute Hazard To The Aquatic Environment - Category 1 Long-term Hazard To The Aquatic Environment - Category 1	
Pictograms			
Signal Word		Danger	
Hazard Statements		**H302**	Harmful if swallowed.
		H318	Causes serious eye damage.
		H410	Very toxic to aquatic life with long lasting effects.
Precautionary Statements	Prevention	**P280**	Wear eye protection/face protection.
		P273	Avoid release to the environment.
		P270	Do not eat, drink or smoke when using this product.
		P264	Wash hands thoroughly after handling.
	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.
		P391	Collect spillage.
		P330	Rinse mouth.
		P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
	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)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Zinc sulphate, heptahydrate	ZnSO4.7H2O	7446-20-0	<=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 (or hair): Remove contaminated clothing and shoes immediately. Flush skin and hair with running water for at least 15 minutes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse.
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. Keep victim calm and warm - Obtain immediate medical care. 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	Non-combustible; Material does not burn.
Extinguishing Media	If material is involved in a fire, use dry chemical, Carbon dioxide (CO2), water spray or foam for extinction.
Fire and Explosion Hazard	Decomposes on heating, emitting toxic fumes,
Hazardous Products of Combustion	Fire or heat may produce irritating, toxic and/or corrosive fumes, including Sulfur oxides, Zinc oxides.
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) 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 - Slippery when spilt. Avoid generating dust. Avoid breathing dust and contact with eyes, skin and clothing.
Clean Up Procedures	Collect material (sweep up and shovel) and keep in suitable, properly labelled containers for disposal (see SECTION 13).
Containment	Stop leak if safe to do so – Prevent entry into waterways, drains or confined areas. Prevent dust cloud.
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 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 generating dust. Avoid breathing dust and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). 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 containers closed when not in use - check regularly for spills. Protect from moisture (hygroscopic). Store away from foodstuffs 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 dusts from solid substances without specific occupational exposure standards: - Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m3 (measured as inhalable dust). - New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m3; TWA = 3 mg/m3 (respirable dust).
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: Dust mask/particulate filter respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Chemical goggles or face shield and safety glasses. - Hand protection: Handle with gloves. Recommended: Impervious gloves, e.g. Nitrile rubber. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Overalls, safety shoes.
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, 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	Crystalline powder or granules
Odour	Odourless
Colour	White
pH	4 - 6 (50 g/L @ 20 °C)
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	>500 °C (Decomposes)
Melting Point	100 °C
Freezing Point	No Data Available
Solubility	Soluble in water
Specific Gravity	1.96 - 1.97
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	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	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	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	Fire or heat may produce irritating, toxic and/or corrosive fumes, including Sulfur oxides, Zinc 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. Protect from moisture (hygroscopic).
Materials to Avoid	Incompatible/reactive with acids, strong oxidising agents.
Hazardous Decomposition Products	Fire or heat may produce irritating, toxic and/or corrosive fumes, including Sulfur oxides, Zinc oxides.
Hazardous Polymerisation	Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	- Acute toxicity: Harmful if swallowed; Ingestion can result in nausea, vomiting, diarrhoea and gastrointestinal irritation. - Skin corrosion/irritation: Contact with skin may result in irritation. Prolonged skin contact can produce dermatitis.

- Eye damage/irritation: Causes serious eye damage.
- Respiratory/skin sensitisation: Not a skin sensitiser.
- Germ cell mutagenicity: Not anticipated to be genotoxic; Weight of evidence indicates the chemical is not mutagenic to germ cells.
- Carcinogenicity: No information available.
- Reproductive toxicity: While fertility toxicity has been observed at very high doses, the levels at which this occurs are unlikely to result from industrial use.
- STOT (single exposure): Breathing in dust or fume may result in respiratory irritation. Severe overexposure may result in bronchitis or pneumonia, burning sensation, cough, wheezing, laryngitis, shortness of breath, headache, nausea, vomiting, airway resistance, cardiovascular effects, pulmonary edema.
- STOT (repeated exposure): Not considered to cause serious damage to health from repeated exposure.
- Aspiration toxicity: No information available.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat: 1,260 mg/kg
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	No information available.
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.
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	No information available.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	Zinc sulphate, heptahydrate
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. (Zinc sulphate, heptahydrate)
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. (Zinc sulphate, heptahydrate)
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 (Timor-Leste)

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc sulphate, heptahydrate)
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. (Zinc sulphate, heptahydrate)
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. (Zinc sulphate, heptahydrate)
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. (Zinc sulphate, heptahydrate)
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)	Schedule 6

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

Approval Code	Additives Process Chemicals and Raw Materials Subsidiary Hazard Group Standard 2020 HSR002503 *HSR003701 (Revoked)

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined

China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
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	ZISULF1001, ZISULF1005, ZISULP0300, ZISULP0301, ZISULP0600, ZISULP0601, ZISULP0602, ZISULP0603, ZISULP0604, ZISULP0605, ZISULP0701, ZISULP0702, ZISULP0703, ZISULP0704, ZISULP0800, ZISULP1051, ZISULP1052, ZISULP1500, ZISULP1501, ZISULP1502, ZISULP1503, ZISULP1504, ZISULP1505, ZISULP1506, ZISULP1507, ZISULP1508, ZISULP1509, ZISULP1510, ZISULP1511, ZISULP1700, ZISULP1701, ZISULP1702, ZISULP1750, ZISULP1802, ZISULP1820, ZISULP1821, ZISULP1822, ZISULP1823, ZISULP1825, ZISULP1900, ZISULP2000, ZISULP2001, ZISULP2002, ZISULP2003, ZISULP2004, ZISULP2005, ZISULP2006, ZISULP2007, ZISULP2008, ZISULP2009, ZISULP2010, ZISULP2011, ZISULP2012, ZISULP2013, ZISULP2014, ZISULP2015, ZISULP2016, ZISULP2017, ZISULP2018, ZISULP2019, ZISULP2020, ZISULP2021, ZISULP2022, ZISULP2023, ZISULP2024, ZISULP2025, ZISULP2026, ZISULP2027, ZISULP2028, ZISULP2029, ZISULP2030, ZISULP2031, ZISULP2032, ZISULP2033, ZISULP2034, ZISULP2035, ZISULP2053, ZISULP2100, ZISULP2101, ZISULP2102, ZISULP2103, ZISULP2110, ZISULP2120, ZISULP2200, ZISULP2201, ZISULP2202, ZISULP2203, ZISULP2204, ZISULP2205, ZISULP2206, ZISULP2300, ZISULP2301, ZISULP2302, ZISULP2303, ZISULP2304, ZISULP2305, ZISULP2306, ZISULP2400, ZISULP2600, ZISULP2601, ZISULP2900, ZISULP3100, ZISULP3101, ZISULP3300, ZISULP3301, ZISULP3302, ZISULP3303, ZISULP3400, ZISULP3700, ZISULP3701, ZISULP4400, ZISULP4401, ZISULP4402, ZISULP4500, ZISULP4501, ZISULP4502, ZISULP4503, ZISULP4600, ZISULP4601, ZISULP4602, ZISULP4800, ZISULP4801, ZISULP5201, ZISULP5500, ZISULP5501, ZISULP5800, ZISULP6000, ZISULP6001, ZISULP6002, ZISULP6003, ZISULP6004, ZISULP6005, ZISULP6006, ZISULP6007, ZISULP6010, ZISULP6011, ZISULP6012, ZISULP6015, ZISULP6020, ZISULP6400, ZISULP6600, ZISULP6601, ZISULP6602, ZISULP6620, ZISULP6800, ZISULP6810, ZISULP7000, ZISULP7001, ZISULP7002, ZISULP7003, ZISULP7004, ZISULP7005, ZISULP7010, ZISULP7015, ZISULP7050, ZISULP7060, ZISULP7080, ZISULP7085, ZISULP7090, ZISULP7095, ZISULP7200, ZISULP7201, ZISULP7202, ZISULP8800, ZISULP8801, ZISULP8802, ZISULP8810, ZISULP8820, ZISULP8821, ZISULP8830, ZISULP9000, ZISULP9001, ZISULP9002, ZISULP9100, ZISULP9200, ZISULP9201, ZISULP9300, ZISULP9301, ZISULP9400, ZISULP9401, ZISULP9600, ZISULP9601, ZISULP9602, ZISULP9603, ZISULP9604, ZISULP9700, ZISULP9800, ZISULP9801, ZISULP9802, ZISULP9803, ZISULP9960
Revision	4
Revision Date	20 Apr 2020
Reason for Issue	Updated SDS
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