

1. IDENTIFICATION

Product Name	Zinc Sulphate Monohydrate
Other Names	Sulfuric Acid, Zinc Salt (1:1), Monohydrate
Uses	Laboratory chemicals, Manufacture of substances
Chemical Family	No Data Available
Chemical Formula	H ₂ O ₄ S.H ₂ O.Zn
Chemical Name	Zinc Sulphate Monohydrate
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
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 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



Pictograms



Signal Word

Danger

Hazard Statements

H302 Harmful if swallowed.
H318 Causes serious eye damage.
H400 Very toxic to aquatic life.

Precautionary Statements

Prevention	P264	Wash exposed skin thoroughly after handling.
	P270	Do not eat, drink or smoke when using this product.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
Response	P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P330	Rinse mouth.
	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	P391	Collect spillage.
	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

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
	6.9B	Substances that are harmful to human target organs or systems
	8.3A	Substances that are corrosive to ocular tissue
Environmental Hazards	9.1A	Substances that are very ecotoxic in the aquatic environment
	9.2C	Substances that are harmful in the soil environment
	9.3C	Substances that are harmful to terrestrial vertebrates

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Zinc Sulphate Monohydrate	No Data Available	7446-19-7	100.00 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed Rinse mouth with water. Give plenty of water to drink provided victim is conscious. Never give anything by mouth to an unconscious person. Do NOT induce vomiting. Seek medical attention.

Eye Immediately flush eyes with plenty of water for 15 minutes, holding eyelids open. In all cases of eye contamination, it is a sensible precaution to seek medical advice.

Skin If skin contact occurs, remove any contaminated clothing and shoes and wash skin with plenty of soap and water.



Inhaled	Seek medical attention. Wash clothing before reuse.
Advice to Doctor	Remove victim from exposure to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Keep person warm and calm. Seek medical attention.
Medical Conditions Aggravated by Exposure	Treat symptomatically based on judgement of doctor and individual reactions of patient.
Medical Conditions Aggravated by Exposure	No information available on medical conditions which are aggravated from exposure to this product.

5. FIRE FIGHTING MEASURES

General Measures	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
Flammability Conditions	No Data Available
Extinguishing Media	In case of fire, use appropriate extinguishing media most suitable for surrounding fire conditions. Suitable media may include water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Fire and Explosion Hazard	Non-combustible Solid.
Hazardous Products of Combustion	May release toxic and hazardous oxides of zinc and sulphur when involved in a fire.
Special Fire Fighting Instructions	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.
Personal Protective Equipment	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).
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	Avoid accidents, clean up immediately. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Use clean, non-sparking tools and equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Clean Up Procedures	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly as hazardous waste.
Containment	Stop leak if safe to do so. Isolate the danger area.
Environmental Precautionary Measures	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.
Evacuation Criteria	Evacuate all unnecessary personnel.
Personal Precautionary Measures	Personnel involved in the clean up should wear full protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Take precautionary measures against static discharges by bonding and grounding equipment. Avoid contact with eyes, skin and clothing. Avoid handling which leads to dust formation. In common with many organic chemicals, may form flammable dust clouds in air. Do not inhale product dust/fumes. Use only in a chemical fume hood.
Storage	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. Hygroscopic. Keep container tightly closed in a dry and well-ventilated place. This product has a UN classification of 3082 and a Dangerous Goods Class 9 (Miscellaneous) according to The Australian Code for the



Transport of Dangerous Goods By Road and Rail. NOTE: This product is subject to special provision AU01 according to The ADG7. SP No. AU01 Environmentally Hazardous Substances meeting the descriptions of UN 3077 are not subject to this Code when transported by road or rail in;
 (a) packagings that do not incorporate a receptacle exceeding 500 kg(L); or
 (b) IBCs.

Container

Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General

No exposure standard has been established for this product by the Australian Safety and Compensation Council (ASCC). However, the exposure standard for dust not otherwise specified is 10mg/m³ (for inspirable dust) and 3mg/m³ (for respirable dust).

NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.

These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

Exposure Limits

No Data Available

Biological Limits

No information available on biological limits for this product.

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. Adequate ventilation should be provided so that exposure limits are not exceeded.

Personal Protection Equipment

RESPIRATOR: Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards (AS1715/1716).

EYES: Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards (AS1336/1337).

HANDS: Handle with gloves. Gloves must be inspected prior to use (AS2161).

CLOTHING: Complete suit protecting against chemicals, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace (AS3765/2210).

Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Full contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min

Splash contact Material: Nitrile rubber Minimum layer thickness: 0.11 mm Break through time: 480 min

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

Work Hygienic Practices

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State

Solid

Appearance

Powder or Granules

Odour

No Data Available

Colour

White

pH

4.5%

Vapour Pressure

No Data Available

Relative Vapour Density

0

Boiling Point

No Data Available

Melting Point

238 °C



Freezing Point	No Data Available
Solubility	30% (21.1 °C) 25°C
Specific Gravity	2500kg/m ³
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	>500 °C
Density	2.5 Relative
Specific Heat	No Data Available
Molecular Weight	179.47g/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 Data Available
Fast or Intensely Burning Characteristics	No Data Available
Flame Propagation or Burning Rate of Solid Materials	No Data Available
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No Data Available
Properties That May Initiate or Contribute to Fire Intensity	No Data Available
Reactions That Release Gases or Vapours	No Data Available
Release of Invisible Flammable Vapours and Gases	No Data Available

10. STABILITY AND REACTIVITY

Chemical Stability	Product is stable under normal conditions of use, storage and temperature.
Conditions to Avoid	Avoid moisture.
Materials to Avoid	Strong oxidizing agents.
Hazardous Decomposition Products	May release toxic and hazardous oxides of zinc and sulphur when involved in a fire.
Hazardous Polymerisation	Hazardous polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	No Data Available
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Eye/Irritant	Risk of serious eye damage. Can cause corrosion of the eye tissue, visual disturbances.
Ingestion	Harmful if swallowed. Can cause gastrointestinal complaints, nausea, vomiting, abdominal complaints, blood in stool, decreased renal function, change in haemogramme/blood composition, weakening of the immune system.
Inhalation	Zinc oxide dust or fume can irritate the respiratory tract. Exposure to high levels of dust or fume can cause metallic taste, marked thirst, coughing, fatigue, weakness, muscular pain, and nausea followed by fever and chills. Severe overexposure may result in bronchitis or pneumonia with a bluish tint to the skin.
Skin/Irritant	May cause skin irritation. Prolonged skin contact can produce a severe dermatitis called oxide pox.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment. EC50 Daphnia - 0.56mg/l (EC50: 48h) LC50 Fish - 2.4mg/l (LC50 : 96h) Threshold limit algal - .05 - .36 EC50 : 72h
Persistence/Degradability	No information available on persistence/degradability for this product.
Mobility	No information available on mobility for this product.
Environmental Fate	Do NOT let product reach waterways, drains and sewers.
Bioaccumulation Potential	Bioaccumable.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility. Dispose of as unused product.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice. Offer surplus and non-recyclable solutions to a licensed disposal company. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

14. TRANSPORT INFORMATION

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc 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

Sea Transport

IMDG Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc Sulphate Monohydrate)
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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	FA,SF
Marine Pollutant	Yes

Air Transport

IATA DGR

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc 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

15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	6

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	HSR003733
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National/Regional Inventories

Australia (AICS)	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

ZISULF1000, ZISULF1002, ZISULF1003, ZISULF2000, ZISULP0100, ZISULP0101, ZISULP0102, ZISULP0103, ZISULP0104, ZISULP0105, ZISULP0106, ZISULP0107, ZISULP0108, ZISULP0109, ZISULP0110, ZISULP0111, ZISULP0112, ZISULP0113, ZISULP0114, ZISULP0115, ZISULP0116, ZISULP0117, ZISULP0118, ZISULP0119, ZISULP0120, ZISULP0121, ZISULP0122, ZISULP0123, ZISULP0124, ZISULP0125, ZISULP0126, ZISULP0127, ZISULP0128, ZISULP0129, ZISULP0130, ZISULP0131, ZISULP0132, ZISULP0133, ZISULP0134, ZISULP0135, ZISULP0200, ZISULP0201, ZISULP0400, ZISULP0401, ZISULP0500, ZISULP0501, ZISULP0502, ZISULP0503, ZISULP0504, ZISULP0505, ZISULP0900, ZISULP1000, ZISULP1001, ZISULP1002, ZISULP1003, ZISULP1004, ZISULP1005, ZISULP1006, ZISULP1007, ZISULP1008, ZISULP1009, ZISULP1010, ZISULP1011, ZISULP1012, ZISULP1013, ZISULP1014, ZISULP1015, ZISULP1016, ZISULP1017, ZISULP1018, ZISULP1019, ZISULP1020, ZISULP1021, ZISULP1022, ZISULP1050, ZISULP1060, ZISULP1100, ZISULP1101, ZISULP1102, ZISULP1103, ZISULP1200, ZISULP1201, ZISULP1250, ZISULP1251, ZISULP1252, ZISULP1253, ZISULP1254, ZISULP1255, ZISULP1260, ZISULP1300, ZISULP1301, ZISULP1302, ZISULP1303, ZISULP1304, ZISULP1305, ZISULP1306, ZISULP1307, ZISULP1310, ZISULP1320, ZISULP1400, ZISULP1401, ZISULP1402, ZISULP1403, ZISULP1404, ZISULP1600, ZISULP1601, ZISULP1602, ZISULP1603, ZISULP1604, ZISULP1800, ZISULP1801, ZISULP1804, ZISULP1805, ZISULP1806, ZISULP1807, ZISULP1808, ZISULP1810, ZISULP1811, ZISULP1812, ZISULP1813, ZISULP1814, ZISULP1815, ZISULP1816, ZISULP1817, ZISULP1818, ZISULP1819, ZISULP1824, ZISULP2500, ZISULP2501, ZISULP2700, ZISULP2701, ZISULP2702, ZISULP2703, ZISULP2704, ZISULP2705, ZISULP2706, ZISULP2707, ZISULP2750, ZISULP2800, ZISULP3000, ZISULP3001, ZISULP3002, ZISULP3003, ZISULP3004, ZISULP3005, ZISULP3006, ZISULP3007, ZISULP3008, ZISULP3200, ZISULP3201, ZISULP3202, ZISULP3203, ZISULP3204, ZISULP3500, ZISULP3501, ZISULP3502, ZISULP3503, ZISULP3600, ZISULP3601, ZISULP3602, ZISULP3603, ZISULP3604, ZISULP3800, ZISULP3801, ZISULP3900, ZISULP4000, ZISULP4001, ZISULP4002, ZISULP4003, ZISULP4004, ZISULP4005, ZISULP4006, ZISULP4010, ZISULP4100, ZISULP4101, ZISULP4102, ZISULP4200, ZISULP4201, ZISULP4202, ZISULP4203, ZISULP4204, ZISULP4250, ZISULP4300, ZISULP4700, ZISULP4701, ZISULP4900, ZISULP4901, ZISULP5000, ZISULP5100, ZISULP5200, ZISULP5205, ZISULP5220, ZISULP5300, ZISULP5301, ZISULP5302, ZISULP5400, ZISULP5600, ZISULP5700, ZISULP5701, ZISULP5900, ZISULP6050, ZISULP6100, ZISULP6101, ZISULP6200, ZISULP6201, ZISULP6202, ZISULP6203, ZISULP6205, ZISULP6210, ZISULP6250, ZISULP6251, ZISULP6255, ZISULP6260, ZISULP6261, ZISULP6265, ZISULP6270, ZISULP6275, ZISULP6300, ZISULP6301, ZISULP6302, ZISULP6401, ZISULP6500, ZISULP6501, ZISULP6700, ZISULP6701, ZISULP6800, ZISULP6900, ZISULP6901, ZISULP6902, ZISULP7100, ZISULP7101, ZISULP7102, ZISULP7105, ZISULP7106, ZISULP7300, ZISULP7301, ZISULP7400, ZISULP7401, ZISULP7402, ZISULP7403, ZISULP7500, ZISULP7501, ZISULP7502, ZISULP7503, ZISULP7504, ZISULP7505, ZISULP7600, ZISULP7601, ZISULP7602, ZISULP7603, ZISULP7700, ZISULP7701, ZISULP7704, ZISULP7705, ZISULP7710, ZISULP7712, ZISULP7750, ZISULP7751, ZISULP7760, ZISULP7761, ZISULP7800, ZISULP7801, ZISULP7900, ZISULP7910, ZISULP7912, ZISULP8000, ZISULP8001, ZISULP8002, ZISULP8003, ZISULP8004, ZISULP8005, ZISULP8100, ZISULP8200, ZISULP8201, ZISULP8300, ZISULP8400, ZISULP8500, ZISULP8501, ZISULP8600, ZISULP8601, ZISULP8605, ZISULP8700, ZISULP8701, ZISULP8900, ZISULP9500, ZISULP9501, ZISULP9900, ZISULP9970, ZISULP9975

Revision 3

Revision Date 12 Nov 2015

Reason for Issue SDS Updated

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 Health 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

