SAFETY DATA SHEET
ZINC CHLORIDE
REVISION 6, DATE 28 JUN 2022

1. IDENTIFICATION

Product Name	**Zinc Chloride**
Other Names	Butter of Zinc; Zinc dichloride; Zinc(II) chloride
Uses	Fluxes (soldering and welding); mordant in printing and dyeing textiles; mercerising cotton; sizing and weighing fabrics; carbonising woollen goods; corrosion inhibitors; absorbents and adsorbents; conductive agents; manufacturing other chemicals; agent in vulcanising rubber; tissue fixative in preserving anatomical specimens; manufacturing parchment paper, artificial silk, activated carbon, cold water glues, magnesia cements and cement for metals; electroplating agents; astringent (pharmaceutical).
Chemical Family	No Data Available
Chemical Formula	ZnCl2
Chemical Name	Zinc chloride
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) 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

Skin Corrosion/Irritation - Category 1B

Serious Eye Damage/Irritation - Category 1

Specific Target Organ Toxicity (Single Exposure) - Category 3

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.
		H314	Causes severe skin burns and eye damage.
		H335	May cause respiratory irritation.
		H410	Very toxic to aquatic life with long lasting effects.
Precautionary Statements	Prevention	**P260**	Do not breathe dusts or mists.
		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.
		P280	Wear protective gloves/protective clothing/eye protection/face protection and suitable respirator.
	Response	**P303 + P361 + P353**	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
		P310	Immediately call a POISON CENTER or doctor.
		P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
		P363	Wash contaminated clothing before reuse.
		P391	Collect spillage.
		P304 + P340	IF INHALED: Remove victim to fresh air and keep comfortable for breathing.
	Storage	**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

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

HSNO Classifications	Health Hazards	**6.1C**	Substances that are acutely toxic- Toxic

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Zinc chloride	ZnCl2	7646-85-7	>=98 - 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. For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. 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 flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.
Skin	IF ON SKIN (or hair): Remove and isolate contaminated clothing and shoes. Immediately flush skin and hair with running water for at least 15 minutes. Immediately call a Poison Centre or doctor/physician for advice. Wash contaminated clothing and shoes before reuse. *For minor skin contact, avoid spreading material onto 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. 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	Treat symptomatically. Keep victim calm and warm. Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed. 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. Most important symptoms and effects, both acute and delayed: Harmful if swallowed. Causes severe skin burns and eye damage. May cause respiratory irritation. Inhalation of fume of this substance may cause lung oedema. The symptoms of lung oedema often do not become manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential.
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. 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 dry chemical, Carbon dioxide (CO2), foam or water spray for extinction. Dike fire-control water for later disposal; do not scatter the material. *Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Fire and Explosion Hazard	Contact with metals may evolve flammable hydrogen gas.
Hazardous Products of Combustion	Fire may produce irritating, corrosive and/or toxic gases, including Hydrogen chloride and Zinc/Zinc oxides.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may be corrosive and/or toxic and cause pollution.
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. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Do not touch or walk through spilled material. Avoid generating dust. Do not breathe dusts or mists and prevent contact with eyes, skin and clothing.
Clean Up Procedures	Collect material and place it into suitable containers for later disposal (see SECTION 13). *DO NOT GET WATER INSIDE CONTAINERS.
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas.
Decontamination	No information available.
Environmental Precautionary Measures	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
Evacuation Criteria	Spill or leak area should be isolated immediately. Evacuate the danger area. Keep unauthorised personnel away. Keep upwind and to higher ground.
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 - Handle under nitrogen, protect from moisture. Handle in accordance with good industrial hygiene and safety practice. Avoid generating dust. Do not breathe dusts or mists and prevent contact with eyes, on skin or 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 SECTION 6).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Protect from moisture (hygroscopic). Keep away from heat and sources of ignition - No smoking. Keep away from food/feedstuffs and incompatible materials (see SECTION 10). Store locked up.
Container	Keep only in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Zinc chloride, fume (CAS No. 7646-85-7): - Safe Work Australia Exposure Standard: TWA = 1 mg/m3; STEL = 2 mg/m3. - New Zealand Workplace Exposure Standard: TWA = 1 mg/m3; STEL = 2 mg/m3. - OSHA PEL/NIOSH REL: TWA = 1 mg/m3; STEL = 2 mg/m3. *Immediately dangerous to life or health (IDLH) concentration: 50 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: Required when dusts are generated. Recommended: N95 Particulate respirator (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to prevent eye contact. Recommended: Tightly fitting safety goggles. Use equipment for eye protection tested and approved under appropriate government standards. - Hand protection: Wear protective gloves. Recommended: Nitrile rubber (Min. layer thickness: 0.11 mm; Break through time: 480 min). - Skin/body protection: Wear appropriate personal protective clothing to prevent skin contact. Recommended: Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the hazardous substance(s) at the specific workplace.
Special Hazards Precaustions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash hands and face after working with substance. Take off immediately all contaminated clothing and shoes. Wash contaminated clothing and shoes before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Granular or crystalline
Odour	Odourless
Colour	White
pH	1 (6M aqueous solution)
Vapour Pressure	1,300 Pa (@ 508 °C)
Relative Vapour Density	No Data Available
Boiling Point	732 °C
Melting Point	283 °C
Freezing Point	283 °C
Solubility	Highly soluble in water (432 g/100 mL) 25°C
Specific Gravity	2.91
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; substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes.
Reactions That Release Gases or Vapours	Decomposes on heating. This produces toxic fumes of Hydrogen chloride and Zinc oxide.
Release of Invisible Flammable Vapours and Gases	Contact with metals may evolve flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	The solution in water is a medium strong acid. Reacts violently with strong oxidants and strong bases. This generates fire and explosion hazard. This produces toxic and corrosive fumes.
Chemical Stability	The product is chemically stable under standard ambient conditions.
Conditions to Avoid	Avoid exposure to moisture.
Materials to Avoid	Incompatible/reactive with strong oxidising agents, strong bases, various metals.
Hazardous Decomposition Products	Decomposes on heating. This produces toxic fumes of Hydrogen chloride and Zinc oxide. Contact with metals may evolve flammable hydrogen gas.
Hazardous Polymerisation	No information available.

11. TOXICOLOGICAL INFORMATION

General Information	Information on toxicological effects: - Acute toxicity: Harmful if swallowed. - Skin corrosion/irritation: Causes severe skin burns and eye damage. - Serious eye damage/irritation: Causes serious eye damage. - Respiratory/skin sensitisation: No data are available on the sensitising potential of zinc chloride in animals. However, data from zinc sulfate heptahydrate (CAS No. 7446-20-0) suggest that zinc chloride is unlikely to be a skin sensitiser. - Germ cell mutagenicity: Based on the available data, there is insufficient evidence to classify zinc chloride as genotoxic. - Carcinogenicity: Classification not possible. - Reproductive toxicity: The chemical does not show specific reproductive or developmental toxicity. - STOT (single exposure): May cause respiratory irritation. - STOT (repeated exposure): Not classified.

- Aspiration toxicity: Not classified.

Information on likely routes of exposure:
- Ingestion: Corrosive on ingestion.
- Eye contact: The substance is corrosive to the eyes.
- Skin contact: The substance is corrosive to the skin.
- Inhalation: The aerosol is severely irritating to the respiratory tract. Inhalation may cause lung oedema. Inhalation of high concentrations of respirable particles (such as fumes) may cause Adult Respiratory Distress Syndrome (ARDS), pulmonary fibrosis and death.
Chronic effects: No information available.

Acute

Ingestion Acute toxicity (Oral):
- LD50, Rat: 1,100 mg/kg bw [Supplier's SDS].

Carcinogen Category None

12. ECOLOGICAL INFORMATION

Ecotoxicity Aquatic toxicity:
- LC50, Fish (Oncorhynchus mykiss): 0.169 mg/l (96 h).
- EC50, Crustacea (Daphnia magna): 0.33 mg/l (48 h) [OECD TG 202].
- NOEC, Fish (Oncorhynchus mykiss): 0.039 mg/l (30 d) [OECD TG 215].
- NOEC, Crustacea (Daphnia magna): 0.039 mg/l (21 d) [OECD TG 211].
- NOEC, Algae (Pseudokirchneriella subcapitata): 0.0049 mg/l (72 h) [OECD TG 201].

Persistence/Degradability The methods for determining biodegradability are not applicable to inorganic substances.

Mobility No information available.

Environmental Fate Very toxic to aquatic life with long lasting effects - Avoid release to the environment.

Bioaccumulation Potential Bioconcentration factor (BCF): 0.4

Environmental Impact No Data Available

13. DISPOSAL CONSIDERATIONS

General Information Dispose of contents/container in accordance with local/regional/national regulations. Offer surplus product 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.

Special Precautions for Land Fill Contaminated packaging: Dispose of as unused product.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	ZINC CHLORIDE, ANHYDROUS
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2331

Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (Malaysia)
ADR Code

Proper Shipping Name	ZINC CHLORIDE, ANHYDROUS
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2331
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (New Zealand)
NZS5433

Proper Shipping Name	ZINC CHLORIDE, ANHYDROUS
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
EPG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2331
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Land Transport (United States of America)
US DOT

Proper Shipping Name	ZINC CHLORIDE, ANHYDROUS
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
ERG	154 Substances - Toxic and/or Corrosive (Non-Combustible)
UN Number	2331
Hazchem	2X
Pack Group	III
Special Provision	No Data Available

Sea Transport
IMDG Code

Proper Shipping Name	ZINC CHLORIDE, ANHYDROUS
Class	8 Corrosive Substances
Subsidiary Risk(s)	CP Marine Pollutant
UN Number	2331
Hazchem	2X
Pack Group	III
Special Provision	No Data Available
EMS	F-A, S-B
Marine Pollutant	Yes

Air Transport
IATA DGR

Proper Shipping Name	ZINC CHLORIDE, ANHYDROUS
Class	8 Corrosive Substances
Subsidiary Risk(s)	No Data Available
UN Number	2331
Hazchem	2X
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	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	ZINC CHLORIDE
Poisons Schedule (Aust)	6

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

Approval Code	HSR001554

National/Regional Inventories

Australia (AIIC)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	231-592-0
Europe (REACh)	Not Determined
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	ZICHLO0300, ZICHLO0500, ZICHLO0700, ZICHLO0701, ZICHLO0702, ZICHLO0703, ZICHLO0704, ZICHLO0705, ZICHLO0706, ZICHLO0707, ZICHLO0708, ZICHLO0709, ZICHLO0710, ZICHLO0711, ZICHLO0712, ZICHLO0713, ZICHLO0714, ZICHLO0715, ZICHLO0716, ZICHLO0717, ZICHLO0718, ZICHLO0719, ZICHLO0720, ZICHLO0721, ZICHLO0722, ZICHLO0723, ZICHLO0724, ZICHLO1000, ZICHLO1001, ZICHLO1002, ZICHLO1003, ZICHLO1004, ZICHLO1005, ZICHLO1006, ZICHLO1007, ZICHLO1008, ZICHLO1009, ZICHLO1010, ZICHLO1100, ZICHLO1300, ZICHLO1500, ZICHLO1800, ZICHLO1850, ZICHLO1851, ZICHLO2000, ZICHLO2001, ZICHLO2500, ZICHLO2600, ZICHLO2601, ZICHLO2602, ZICHLO2800, ZICHLO3000, ZICHLO3300, ZICHLO3500, ZICHLO4000, ZICHLO4500, ZICHLO5000, ZICHLO5300, ZICHLO6800, ZICHLO9900
Revision	6
Revision Date	28 Jun 2022
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) **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