



SAFETY DATA SHEET CHOLINE CHLORIDE SOLUTION REVISION 5, DATE 28 DEC 2022

1. IDENTIFICATION

Product Name	Choline Chloride Solution
Other Names	Choline Chloride 70% Liquid; Choline Chloride 75% Liquid
Uses	Feed additive.
Chemical Family	No Data Available
Chemical Formula	C5H14ClNO
Chemical Name	Choline chloride, aqueous solution
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)

Not Scheduled



Globally Harmonised System

Hazard Classification	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Signal Word	None

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)
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Safe Work Australia

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

Hazard Classification	NOT hazardous according to the criteria of Safe Work Australia under Model WHS Regulations
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3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Choline chloride	C5H14ClNO	67-48-1	>=70 %
Water	H2O	7732-18-5	<=25 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	IF SWALLOWED: Rinse mouth, then drink plenty of water. Get medical advice/attention 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. If eye irritation persists, get medical advice/attention.
Skin	IF ON SKIN: Remove contaminated clothing and shoes immediately. Wash skin with plenty of soap and running water/shower. 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.
Advice to Doctor	Treat symptomatically. *Most important symptoms and effects, both acute and delayed: May cause eye irritation.
Medical Conditions Aggravated by Exposure	No information available.

5. FIRE FIGHTING MEASURES

If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out.

General Measures	Dike fire-control water for later disposal.
Flammability Conditions	Non-combustible; However, following evaporation of aqueous component under fire conditions, the non-aqueous component may decompose and/or burn.
Extinguishing Media	Use dry chemical, Carbon dioxide (CO ₂), foam or water spray for extinction.
Fire and Explosion Hazard	Containers may explode when heated.
Hazardous Products of Combustion	Fire may produce irritating and/or toxic gases, including carbon oxides, nitrogen oxides, chlorine compounds.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution. Dispose of fire debris and contaminated extinguishing water in accordance with official regulations.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only 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 accidents, clean up immediately! Avoid breathing mist/vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Absorb with earth, sand or other non-combustible material and transfer to properly labelled containers or drums for disposal (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Dike far ahead of large spill for later disposal.
Decontamination	Clean contaminated objects and areas thoroughly observing environmental regulations.
Environmental Precautionary Measures	Prevent entry into drains and waterways.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
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 breathing mist/vapours and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8).
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly when not in use - check regularly for leaks. Keep away from heat and sources of ignition - No smoking. Keep away from 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.
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	<ul style="list-style-type: none"> - Respiratory protection: Wear respiratory protection in case of vapour/aerosol release. Recommended: Particle filter with medium efficiency for solid and liquid particles (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Safety glasses with side-shields. - Hand protection: Handle with gloves. Recommended: Chemical resistant protective gloves. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Closed work clothing. Body protection must be chosen based on level of activity and exposure.
Special Hazards Precautions	No information available.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Hands and/or face should be washed before breaks and at the end of the shift. Take off contaminated clothing and wash it before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Transparent liquid
Odour	Light, characteristic
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	-18 °C
Solubility	Soluble in water & alcohol
Specific Gravity	1.09 - 1.10
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	Not applicable.
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; However, following evaporation of aqueous component under fire conditions, the non-aqueous component may decompose and/or burn.
Reactions That Release Gases or Vapours	Fire/decomposition may produce irritating and/or toxic gases, including carbon oxides, nitrogen oxides, chlorine compounds.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	Stable under normal conditions.
Conditions to Avoid	Avoid heat.
Materials to Avoid	Incompatible/reactive with strong acids, strong bases, Iron, Mild Steel, Galvanised Steel.
Hazardous Decomposition Products	Fire/decomposition may produce irritating and/or toxic gases, including carbon oxides, nitrogen oxides, chlorine compounds.
Hazardous Polymerisation	Has not been reported.

11. TOXICOLOGICAL INFORMATION

General Information	<p>Information on toxicological effects:</p> <ul style="list-style-type: none">- Acute toxicity: No information available.- Skin corrosion/irritation: No information available.- Serious eye damage/irritation: No information available.- Respiratory/skin sensitisation: No information available.- Germ cell mutagenicity: No information available.- Carcinogenicity: No information available.- Reproductive toxicity: No information available.- STOT (single exposure): No information available.- STOT (repeated exposure): No information available.- Aspiration toxicity: No information available. <p>Information on likely routes of exposure:</p> <ul style="list-style-type: none">- Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea.- Eye contact: May cause irritation.- Skin contact: May cause irritation.- Inhalation: May cause irritation. <p>Chronic effects: No information available.</p>
Acute	
Ingestion	<p>Acute toxicity (Oral):</p> <p>COMPONENT: Choline chloride (CAS No. 67-48-1):</p> <p>- LD50, Rat: 3,400 mg/kg</p>
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (<i>Leuciscus idus</i>): >10,000 mg/l (96 h) [DIN 38 412, L1, L15]. - EC50, Crustacea (<i>daphnia magna</i>): >500 mg/kg (48 h) [Directive 79/831/CEE]. - EC50, Algae/aquatic plants (<i>Desmodesmus subspicatus</i>): >500 mg/l (72 h) [DIN 38 412, L9].
Persistence/Degradability	Expected to be readily biodegradable.
Mobility	No information available.
Environmental Fate	Prevent entry into drains and waterways.
Bioaccumulation Potential	Material does not bioaccumulate.
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	Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION**Land Transport (Australia)**

ADG Code

Proper Shipping Name	Choline Chloride Solution
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
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	Choline Chloride Solution
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
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	Choline Chloride Solution
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
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Choline Chloride Solution
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
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Choline Chloride Solution
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
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Choline Chloride Solution
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
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

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)

Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code

Not Hazardous

National/Regional Inventories**Australia (AIC)**

Listed

Canada (DSL)

Listed

Canada (NDSL)

Not Determined

China (IECSC)

Listed

Europe (EINECS)

200-655-4

Europe (REACH)

Not Determined

Japan (ENCS/METI)

Not Determined

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**

CHCHLO1014, CHCHLO1016, CHCHLO1017, CHCHLO1021, CHCHLO1104, CHCHLO1160, CHCHLO1400, CHCHLO2300, CHCHLO2301, CHCHLO2800, CHCHLO2801, CHCHLO2802, CHCHLO2803, CHCHLO2810, CHCHLO3700, CHCHLO3701, CHCHLO3703, CHCHLO4100, CHCHLO4200, CHCHLO4800, CHCHLO5300, CHCHLO5500, CHCHLO5600, CHCHLO6300,

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CHCHLO6400, CHCHLO6700, CHCHLO7000, CHCHLO7001, CHCHLO7002, CHCHLO7003, CHCHLO7004, CHCHLO7005, CHCHLO7006, CHCHLO7100, CHCHLO7300, CHCHLO7400, CHCHLO7500, CHCHLO7501, CHCHLO7502, CHCHLO7503, CHCHLO7504, CHCHLO7505, CHCHLO7506, CHCHLO7507, CHCHLO7508, CHCHLO7509, CHCHLO7510, CHCHLO7511, CHCHLO7512, CHCHLO7513, CHCHLO7514, CHCHLO7515, CHCHLO7516, CHCHLO7517, CHCHLO7518, CHCHLO7519, CHCHLO7520, CHCHLO7600, CHCHLO7601, CHCHLO7602, CHCHLO7603, CHCHLO7701, CHCHLO7702, CHCHLO7900, CHCHLO8200, CHCHLO8600

Revision

5

Revision Date

28 Dec 2022

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

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tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight