

1. IDENTIFICATION

Product Name	Ethanol
Other Names	Alcohol; Ethyl Alcohol
Uses	Solvent.
Chemical Family	No Data Available
Chemical Formula	C ₂ H ₆ O
Chemical Name	Ethanol
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) Not scheduled

Globally Harmonised System



Hazard Classification	Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)	
Hazard Categories	Flammable Liquids - Category 2 Serious Eye Damage/Irritation - Category 2A	
Pictograms		
Signal Word	Danger	
Hazard Statements	H225	Highly flammable liquid and vapour.
	H319	Causes serious eye irritation.
Precautionary Statements	Prevention	P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking. P233 Keep container tightly closed. P240 Ground/bond container and receiving equipment. P241 Use explosion-proof electrical/ventilating/lighting/equipment. P242 Use only non-sparking tools. P243 Take precautionary measures against static discharge. P264 Wash hands and eyes thoroughly after handling. P280 Wear protective gloves/protective clothing/eye protection/face protection.
	Response	P303 + P361 + P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 If eye irritation persists: Get medical advice/attention. P370 + P378 In case of fire: Use carbon dioxide (CO2), dry chemical, foam or water fog for extinction.
	Storage	P403 + P235 Store in a well-ventilated place. Keep cool.
	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)
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Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

HSNO Classifications	Physical Hazards	3.1B	Flammable liquid - high hazard
	Health Hazards	6.4A	Substances that are irritating to the eye

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Ethyl Alcohol (Ethanol)	No Data Available	64-17-5	>95.5 %
Water	No Data Available	7732-18-5	<4.5 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed	Rinse mouth with water. Give water to drink provided victim is conscious. Do NOT induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration. Seek immediate medical attention. Do NOT delay.
Eye	Immediately hold eyes open and wash continuously with water for at least 15 minutes. Transport to hospital or doctor.
Skin	Immediately remove all contaminated clothing, including footwear after wetting with water if available. Wash affected areas thoroughly with water, and soap if available.
Inhaled	Remove to fresh air, lay down and rest. If not breathing, apply resuscitation. Keep warm. Transport to hospital or doctor.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of patient. Immerse affected area in cold water for 10-15 minutes. Bandage lightly with sterile dressing. Treat for shock if required. Transport to hospital if required.
Medical Conditions Aggravated by Exposure	No information available on medical conditions aggravated by exposure to this product.

5. FIRE FIGHTING MEASURES

General Measures	Flame-proof equipment is necessary in all areas where this chemical is being used. Nearby equipment must be earthed.
Flammability Conditions	Highly flammable Liquid - explosive vapour.
Extinguishing Media	Water fog or foam.
Fire and Explosion Hazard	May form flammable mixtures with air. Vapours are heavier than air and may travel to an ignition source and flash back. Vapour can spread along the ground and collect in low or confined areas. Vapour may cause flash fire. May be ignited by heat, sparks or flame. May polymerise explosively when involved in a fire. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding.
Hazardous Products of Combustion	May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition.
Special Fire Fighting Instructions	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. 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) or chemical splash suit. Please note: Structural fire fighters uniform will provide limited protection.
Flash Point	13 °C
Lower Explosion Limit	3.3 %
Upper Explosion Limit	19 %
Auto Ignition Temperature	No Data Available
Hazchem Code	•2YE

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Shut off all possible sources of ignition. Use clean, non-sparking tools and equipment. Avoid accidents, clean up immediately. Increase ventilation. Avoid walking through spilled product as it may be slippery when spilt. Water spray may be used to cool and disperse vapours, protect personnel, and dilute spills to form non-flammable mixtures. Do NOT get water inside containers. A vapour suppressing foam may be used to reduce vapours. Water spray may
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reduce vapour but may not prevent ignition in closed spaces.

Clean Up Procedures

Soak up spilled product using absorbent non-combustible material such as sand or soil. Avoid using sawdust or cellulose. When saturated collect material, transfer to suitable, labelled, dry chemical-waste containers and dispose of promptly as hazardous waste. Use water spray to disperse vapour. Wash area down with excess water.

Containment

Stop leak if safe to do so.

Environmental Precautionary 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. Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.

Evacuation Criteria

Evacuate all unnecessary personnel.

Personal Precautionary Measures

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) or chemical splash suit. Please note: Structural fire fighters uniform will provide limited protection.

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. Do not inhale product vapours. Avoid prolonged or repeated exposure. Operations should be carried out in an efficient fume hood or equivalent system. Remove contaminated clothing and wash before reuse. Discard contaminated shoes. Keep away from combustible material. Empty containers pose a fire risk, evaporate residue under a fume hood. Chemicals should be used only by those trained in handling potentially hazardous materials.

Storage

Store in cool, dry, well ventilated area, removed from oxidising agents, acids, alkalis, heat or ignition sources, foodstuffs, out of direct sunlight and out of the reach of children.

Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

Check regularly for leaks or spills. Large storage areas should have appropriate fire protection.

This product has a UN Classification of 1170 and a Dangerous Goods Class 3 (flammable) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.

Container

Container type/package must comply with all applicable local legislation. Store in original packaging as approved by manufacturer.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General

The following exposure standard has been established by the Safe Work Australia (SWA); Ethyl Alcohol CAS: 64-17-5 TWA = 1000ppm (1880mg/m³) 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 limit values 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.

In poorly ventilated areas, mechanical explosion proof extraction ventilation is recommended. Flammable / explosive vapours may accumulate in poorly ventilated areas. Vapours are heavier than air and may travel some distance to an ignition source and flash back. DO NOT enter confined spaces where vapour may have collected. Maintain vapour levels below the recommended exposure standard.

Personal Protection Equipment

RESPIRATOR: Where an inhalation risk exists, wear a type A (Organic vapour) Respirator (AS1715/1716).

EYES: Splash proof goggles (AS1336/1337).

HANDS: Elbow length nitrile or neoprene gloves (AS2161).

CLOTHING: Chemical-resistant coveralls, splash apron and safety footwear (AS3765/2210).

Work Hygienic Practices

No Data Available

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Slight
Colour	Clear, Free of any foreign matter
pH	No Data Available
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	78 °C
Melting Point	No Data Available
Freezing Point	No Data Available
Solubility	Complete
Specific Gravity	0.79g/ml
Flash Point	13 °C
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 Data Available
Potential for Dust Explosion	Product is a liquid.
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

General Information	Highly flammable liquid. Hygroscopic: absorbs moisture or water from surrounding air.
Chemical Stability	Product is stable under normal conditions of use, storage and temperature.

Conditions to Avoid	Avoid heat, sparks, flames, direct sunlight, moisture, freezing, static charges, mechanical shock, high temperatures and other high energy ignition sources. Also avoid enclosed spaces.
Materials to Avoid	Incompatible with oxidising agents (eg. Hypochlorites, peroxides), acids (sulphuric acid), acid chlorides, strong alkalis (eg. Hydroxides), alkali metals, ammonia, potassium tert-butoxide and all sources of heat and ignition.
Hazardous Decomposition Products	May evolve toxic gases (carbon oxides, hydrocarbons) when heated to decomposition.
Hazardous Polymerisation	Hazardous Polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	Low to moderate toxicity – irritant. This product has the potential to cause adverse health effects with chronic over exposure. Use safe work practices to avoid eye or skin contact and over exposure via inhalation. Chronic ingestion may result in cirrhosis of the liver. Over exposure may cause central nervous system depression. LC50 (Inhalation): 2000 ppm/10hours (rat). LD50 (Ingestion): 3450 mg/kg (mouse).
EyeIrritant	Irritant. Exposure may result in lacrimation, irritation, pain and redness.
Ingestion	Low toxicity. Ingestion may result in gastrointestinal irritation, nausea, vomiting, abdominal pain, diarrhoea, headache, dizziness and drowsiness with large doses. Liver damage may occur with high level of chronic ingestion.
Inhalation	Irritant. Inhalation may cause irritation to the respiratory system, nose and throat irritation, coughing and headache. Over exposure may result in nausea, dizziness and drowsiness.
SkinIrritant	Irritant. Prolonged contact may result in drying and defatting of the skin, rash and dermatitis. Toxic effects may result from skin absorption.
Carcinogen Category	No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity	Fish toxicity: LC0 (Golden ide) >1000 mg/L/48hrs. Invertebrate toxicity: EC50 (Daphnia magna) is >1000 mg/L/24 hrs.
Persistence/Degradability	It will biodegrade, probably to acetic acid and formaldehyde. Ethanol will volatilise from water and biodegrade, and is not expected to bioconcentrate. It will photodegrade in air with a half-life ranging from hours (polluted air) to days (clean air).
Mobility	If spilled on soil, ethanol will either evaporate or leach into the ground due to the relatively high vapour pressure and low absorption in soil.
Environmental Fate	Do NOT allow product to reach waterways drains and sewers.
Bioaccumulation Potential	Ethanol has a low potential for bioaccumulation. biodegradable in water.
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.
Special Precautions for Land Fill	Contact a specialist disposal company or the local waste regulator for advice.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	14 Liquids - Highly Flammable
UN Number	1170
Hazchem	•2YE
Pack Group	II
Special Provision	No Data Available

Land Transport (Malaysia)

ADR

Proper Shipping Name	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	14 Liquids - Highly Flammable
UN Number	1170
Hazchem	•2YE
Pack Group	II
Special Provision	No Data Available

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
EPG	14 Liquids - Highly Flammable
UN Number	1170
Hazchem	•2YE
Pack Group	II
Special Provision	No Data Available

Land Transport (United States of America)

US DOT

Proper Shipping Name	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
ERG	127 Flammable Liquids (Polar / Water-Miscible)
UN Number	1170
Hazchem	2YE
Pack Group	II
Special Provision	No Data Available

Sea Transport

IMDG Code

Proper Shipping Name	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available

UN Number	1170
Hazchem	2YE
Pack Group	II
Special Provision	No Data Available
EMS	FE,SD
Marine Pollutant	No

Air Transport

IATA DGR

Proper Shipping Name	ETHANOL (ETHYL ALCOHOL) or ETHANOL SOLUTION (ETHYL ALCOHOL SOLUTION)
Class	3 Flammable Liquids
Subsidiary Risk(s)	No Data Available
UN Number	1170
Hazchem	2YE
Pack Group	II
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)
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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	HSR001144
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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	ETALCO1000, ETALCO1001, ETALCO1002, ETALCO1003, ETALCO1004, ETALCO1005, ETALCO1006, ETALCO1007, ETALCO1008, ETALCO1009, ETALCO1100, ETALCO1200, ETALCO1300, ETALCO1500, ETALCO1501, ETALCO1600, ETALCO1610, ETALCO2000, ETALCO2001, ETALCO2100, ETALCO2200, ETALCO2500, ETALCO2900, ETALCO3000, ETALCO3001, ETALCO3010, ETALCO3020, ETALCO3050, ETALCO3100, ETALCO3200, ETALCO3201, ETALCO4000, ETALCO4010, ETALCO4050, ETALCO4100, ETALCO5000, ETALCO5010, ETALCO7000, ETALCO7100, ETALCO7500, ETALCO8000, ETALCO9500, ETALCO9900
Revision	3
Revision Date	20 Apr 2015
Reason for Issue	Update SDS
Key/Legend	<p>< 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</p>

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