ETHYL ALCOHOL
SAFETY DATA SHEET

Issue Date:01.05.2019
Version: #11

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name:	Ethyl Alcohol
Synonyms:	Ethanol, Alcohol, Absolute ethanol, Anchol, Anhydrous ethanol, Hydrous ethanol
Molecular Formula:	C_2H_5OH
Uses:	General solvent, ingredient for alcoholic beverages, octane booster for petrol.
Supplier: **Street Address:** **Telephone:**	Lactanol Limited, Fonterra Centre. 109 Fanshawe Street, Auckland, New Zealand. 09 374 9000
Emergency Contact Numbers:	In New Zealand 0800 CHEMCALL (0800 243 622) 24 hours In Australia 1800 127 406 In other Countries +64 4 917 9888 National Poisons Centre 0800 764 766 (0800 POISON) Fire and Emergency NZ – 111

2.HAZARDS IDENTIFICATION

GHS Classification and Categories	Flammable Liquid Eye Irritation	Category 2 Category 2
Dangerous Goods:	Flammable Liquid Class 3, packing group II	
GHS Single Word	Danger	
Hazard Statement:	Highly Flammable liquid and vapour. Causes skin and eye irritation. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Liquid evaporates quickly and can ignite leading to a flash fire, or an explosion in a confined space.	
Prevention Statements:	Read Safety Data Sheet before use. Keep away from heat, sparks, open flames, hot surfaces. No smoking. . Keep container tightly closed. Take precautionary measures against static discharge.	

Ground container and receiving equipment.
Use explosion-proof electrical equipment
Use only non-sparking tools.

Wear protective gloves, eye protection and face protection.

Storage Statement: Store in a well ventilated place. Keep cool.

Disposal Statement: Please refer to **Section 13 Disposal Considerations.**

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients:	**CAS no.**	**Contents**
Anhydrous Ethyl Alcohol	64 -17- 5	≥99.5%
Water	7732-18-5	≤0.5%
Hydrous Ethyl Alcohol	64 -17- 5	≥96.0%
Water	7732-18-5	≤4.0%

4. FIRST AID MEASURES

Ingestion: Rinse mouth with water. Give plenty of water to drink. DO NOT induce vomiting. Seek immediate medical assistance.

Eye Contact: Irrigate with copious quantities of water for at least 20 minutes. In all cases of eye contamination it is a sensible precaution to seek medical advice.

Skin Contact: Wash contaminated skin with plenty of water. Remove contaminated clothing and wash before re-use. If irritation occurs seek medical advice.

Inhalation: Remove victim from exposure – avoid becoming a casualty. Remove contaminated clothing and loosen remaining clothing. Allow patient to assume most comfortable position and keep warm. Keep at rest until fully recovered. Seek immediate medical advice.

Notes to Physician: Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Specific Hazards: Highly flammable liquid. Severe Fire Hazard when exposed to Oxidisers. May form flammable vapour mixtures with air. Avoid all ignition sources.
Can be considered a severe explosive hazard when exposed to heat, flame and /or oxidisers.
Intrinsically safe equipment necessary in area where chemical is being used. Nearby equipment must be earthed. Vapour may travel considerable distance to source of ignition and flash back.
On combustion, may emit toxic fumes of carbon monoxide (CO).

Response Statements:	If on skin (or hair,) remove/take off immediately all contaminated clothing, rinse skin with water/shower. In case of fire, use water fog (or if unavailable fine water spray), Foam, Dry agent (Carbon Dioxide), Sand, Dolomite.
Suitable Extinguishing Media:	Water fog (or if unavailable fine water spray), Foam, Dry agent (Carbon Dioxide), Sand, Dolomite. DO NOT extinguish fire unless flow can be stopped first.
Fire Fighting Advice:	Keep upwind. Consider evacuation. Shut off all possible sources of ignition. If safe to do so, remove containers from path of fire. Keep containers cool with water spray. Heating can cause expansion or decomposition leading to a violent rupture of containers. On burning will emit toxic fumes including those of carbon monoxide and carbon dioxide. **Fire fighters to wear** self-contained, breathing apparatus, if risk of exposure to vapour or products of combustion. And protective gloves and boots.

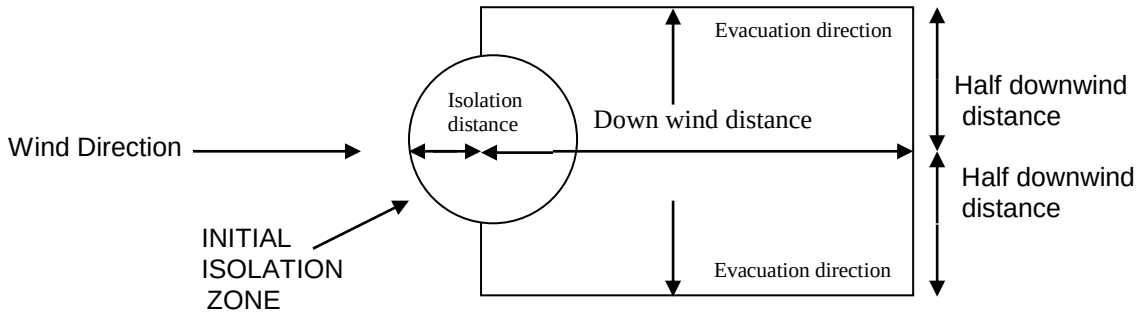
6. ACCIDENTAL RELEASE MEASURES

Spill Cleanup Methods:	Shut off all possible sources of ignition. Clear area of all unprotected personnel. Wear protective equipment to prevent skin and eye contamination and inhalation of vapours. Contain DO NOT allow chemical to enter confined spaces such as sewers due to explosion risk.
Minor Spills: (220 litres or less)	Remove all ignition sources. Clean up all spills immediately Avoid breathing vapours and contact with skin & eyes Small spills can be removed by the use of a small spills kit. Or use absorbent soil, sand or other inert material to absorb the spill. Collect this material and seal in properly labelled containers for disposal. Wash area down with excess water.
Major Spills: (Greater than 220 litres)	Clear area of personnel and move upwind. Alert Fire Brigade; explain location and nature of hazard. Ethyl alcohol May be violently or explosively reactive. Wear breathing apparatus plus protective clothing. Prevent, by any means available, spillage from entering drains or watercourse. Consider evacuation. No smoking, naked lights or ignition sources. Increase ventilation. Stop leaks if safe to do so. Water spray or fog may be used to disperse/absorb vapour. Contain spill with sand, earth or vermiculite. Use only spark-free shovels and explosion proof equipment. Collect recoverable product into labelled containers for recycling. Absorb remaining product with sand, earth or vermiculite. Collect solid residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains.

If contamination of sewers or waterways and or surrounding environment has occurred notify local emergency services, local authorities and the Regional Council.

Protective Actions for Spill:

PROTECTIVE ACTION ZONE



Isolation Distance	25 metres
Downwind Protection Distance	300 metres

FOOTNOTES

1. PROTECTIVE ACTION ZONE is defined as the area in which people are at risk of harmful exposure. This zone assumes that random changes in wind direction confines the vapour plume to an area within 30 degrees on either side of the predominant wind direction, resulting in a crosswind protective action distance equal to the downwind protective action distance.
2. PROTECTIVE ACTIONS should be initiated to the extent possible, beginning with those closest to the spill and working away from the site in the downwind direction. Within the protective action zone a level of vapour concentration may exist resulting in nearly all unprotected persons becoming incapacitated and unable to take protective action and/or incurring serious or irreversible health effects.
3. INITIAL ISOLATION ZONE is determined as an area, including upwind of the incident, within which a high probability of localised wind reversal may expose nearly all persons without appropriate protection to life-threatening concentrations of the material.

7. HANDLING AND STORAGE

Handling:

Keep away from sources of ignition. Avoid spilling on skin and eye contact. Ventilate, well. Avoid breathing vapours. Use approved respirator if air contamination is above acceptable level. It is advisable not to use contact lens unless using tight fitting goggles or full face respirator is worn. Wear protective clothing when risk of exposure occurs. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. Vapour may ignite on pumping or pouring due to static electricity, earth and secure metal containers when dispensing or pouring product. Use spark-free tools when handling.

Storage:

Store in well-ventilated area and away from sources of ignition and heat. Store in cool, dry place and out of direct sunlight. Store away from oxidising agents, such as alkali metals, acids, acid chlorides, ammonia and potassium tert-butoxide. In case of flexible tubing usage, check with manufacturer to find product compatibility.

Aluminium is not a suitable container for storage. Ground the container and transfer equipment to eliminate static electric sparks. Keep containers closed at all times – check regularly for leaks.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Standards:

Threshold Limit Value – Time Weighted Average (TLV – TWA) 1,000ppm 1880mg/m3 (*As published by The Department of Labour, New Zealand.)*

Odour Threshold 350ppm

Engineering Controls:

Ensure ventilation is adequate to maintain air concentrations below Exposure Standards. Use with local exhaust ventilation or while wearing organic vapour respirator. Vapour is heavier than air – Prevent concentrations in hollows or sumps. DO NOT enter confined spaces where vapour may have collected. Keep containers closed when not in use. Earth all containers to reduce the possibility of sparks from static electricity. Flameproof equipment to be used with this product. Refer SAA HB 13/NEEITC 1992 Electrical Equipment for Hazardous Areas.

Personal Protection:

Wear appropriate clothing to prevent repeated or prolonged skin contact
Gloves made of butyl rubber, Nitrile + PVC or PVC.

Where eye exposure is reasonably probable always wear approved chemical safety goggles or Safety glasses with side shields. It would be advisable not to use Contact lenses when working with this chemical as soft lenses may absorb irritants and all lenses will concentrate vapours on the surface of the eye. If inhalation risk exists wear organic vapour respirator meeting the requirements of AS/NZS 1715 and AS/NZS1716.

9. PHYSICAL AND CHEMICAL PROPERTIES (for 100% Ethanol)

Appearance and Odour:	Clear, colourless liquid with characteristic odour.
Solubility:	Miscible with water, methanol, ether, chloroform & acetone.
Specific Gravity:	0.7904 @ 20^0C
Boiling Point:	78.32^0C
Freezing Point:	-114.1^0C
Melting Point:	-112.3^0C
Vapour Pressure:	5.9kPa @ 20^0C
Relative Vapour Density:	1.59 (air = 1)
Coefficient of Cubic Expansion:	0.0011 per ^{0}C
Relative Density of vapour/air mixture at 20°C:	1.03 (air = 1)
Decomposition Point (c):	Not Available
Viscosity:	1.08cP @ 25^0C or 1.2mPa.s @ 20^0C
Flash Point:	13^0C closed cup.
Auto-ignition Temperature:	363^0C approx.
% Volatile by volume:	100

Flammable Limits	Lowest Flammable Level (LFL) 3.3% v/v Upper Flammable Level (UFL) 19.0% v/v
pH Value:	Neutral
Evaporation Rate:	2.4 (n-Butyl acetate = 1)
Explosion Hazard:	Moderate/severe in a confined space in the presence of source of ignition.
Formula:	C_2H_5OH
Molecular Weight:	46.07
Chemical Family:	Alcohol (primary aliphatic).
Other:	Is hygroscopic and a stable compound.
Oxidizing Agents:	It can react vigorously with these -
Acids:	Concentrated nitric acid - violent reaction. Sulphuric acids - the mixture may become warm. Other acids - no dangerous reaction.
Alkalis:	No dangerous reaction.
Salt or Fresh Water:	No dangerous reaction.
Exposure Stds (TLV-TWA)	1,000ppm – 1880mg/m3
Engineering controls	All must be intrinsically safe

10. STABILITY AND REACTIVITY

Stability: Ethanol is incompatible with oxidising agents, alkali metals, acids, acid chlorides, ammonia and potassium tert-butoxide. Aluminium containers should be avoided as aluminium alcoholates may be formed under certain conditions. Hazardous polymerisation will not occur. Ethanol is Hygroscopic.

11. TOXICOLOGICAL INFORMATION

General: No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may arise if the product is mishandled and over exposure occurs are:

Acute Effects:

Ingestion: Swallowing can result in nausea, vomiting, dizziness, fatigue, headache and central nervous system depression. If the victim is uncoordinated there is a greater likelihood of vomit entering the lungs and causing subsequent complications.

Eye Contact: Is an eye irritant.
HSNO classification, 6.4A - Eye Irritant

Skin Contact: Contact with skin will result in mild irritation. Will have a degreasing action on the skin. Repeated or prolonged skin contact may lead to irritant contact dermatitis.

Inhalation: Vapour may be irritating to mucous membranes and respiratory tract. Inhalation of vapour can result in headaches, dizziness, fatigue and possible nausea. Inhalation of high concentrations can produce central nervous system depression, which can

contribute to loss of co-ordination, impaired judgement and, if exposure is prolonged unconsciousness.

Long Term Effects:

Evidence from animal tests and studies on exposed humans indicate that repeated or prolonged exposure to this chemical by inhalation or ingestion could result in liver damage.

Acute Toxicity/Chronic Toxicity:

Oral LD50 (rat): 7060mg/kg.
Inhalation LC50 (rat): 20,000ppm/10hr.
Estimated fatal dose (human): 300-400ml of Pure Ethanol.
Eyes (Rabbit): Mild-Severe irritant
Skin (Rabbit): Mild irritant.
A study of the effects of ethanol inhalation in humans, found that between 5000-10,000ppm subjects experience coughing and smarting of the eyes and nose, with the symptoms disappearing within minutes. People exposed at 15,000ppm experienced continuous lacrimation and coughing. Irritation of the eyes and respiratory tract were not noted at concentrations below 5000ppm
There is no clear evidence that ethanol is carcinogenic to laboratory animals; it is however a tumour promoter. Ethanol typically inactive in genotoxic assays, but on some occasions, a weak response has been noted.
Oral exposure to ethanol produces malformations and developmental toxicity in rats and mice at maternally toxic doses. No developmental effects were observed in rats from inhalation at doses up to 20,000ppm.

12. ECOTOXICITY INFORMATION

Environmental Effects:

Ethanol has a low potential for bioaccumulation and is substantially biodegradable in water.
LC50 (rainbow trout) (24hr) (flow through): 11,200mg/L.
n-Octanol/Water Partition Coefficient: -0.3
Avoid contamination of waterways.

13. DISPOSAL CONSIDERATIONS

Can be disposed of in a sewage treatment facility provided it is first diluted with sufficient water to bring the mixture below the flammable threshold (less than 3% ethanol by volume) i.e. to raise the flash point to above 93°C. This requirement is included to ensure that flammable substances do not collect in pockets of sewage collection system with resultant fires or vapour explosions.
Large volumes may be suitable for re-distillation by solvent contractors.

Container Disposal

Empty containers may contain hazardous residues.
Labels should not be removed from containers until they have been appropriately cleaned. Do not cut, puncture or weld on or near to the containers.

Containers should be cleaned by approved methods and then re-used or disposed of by landfill. After cleaning, all existing labels should be removed. Do not incinerate closed containers.

14. TRANSPORT INFORMATION

Road and Rail:

UN no:	UN1170
Dangerous Goods Class:	3 Flammable Liquid
Hazchem Code:	2YE
Packing Group:	II
Proper Shipping Name:	Ethanol or Ethyl Alcohol

Segregation: Not to be loaded with explosives (Class 1), flammable gases (Class 2.1). If both are in bulk, toxic gases (Class 2.3), spontaneously combustible substances (Class 4.2), oxidising agents (Class 5.1), organic peroxides (Class 5.2) or radioactive substances (Class 7), however exemptions may apply.

Ethanol is classified as Dangerous Goods and must comply with the Land Transport Rule: Dangerous Goods 2005, and NZS5433:2012 Transport of Dangerous Goods on Land.

Sea: Classified as Dangerous Goods by International maritime Dangerous Goods Code (IMDG Code) for transport by sea.

UN no:	UN1170
Class:	3 Flammable Liquid
Packing Group:	II
Proper Shipping Name:	Ethanol or Ethyl Alcohol

Air : Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air.

UN no:	UN1170
Class:	3 Flammable Liquid
Packing Group:	II
Proper Shipping Name:	Ethanol (Ethyl Alcohol)

15. REGULATORY INFORMATION

HSNO Approval number: HSR: 001144

HSNO CLASSIFICATIONS: 3.1B (Highly Flammable Liquid)
6.4A (Eye Irritant)

HSNO CONTROLS: Trigger quantities for this substance by itself in a Place

- Approved Handler Test Certificate:
  250 litres (when in containers > 5L)
  500litres (when in containers ≤ 5L)

- Hazardous Substance Location:

50 litres

- Location Test Certificate:
  50 litres (open container)
  100 litres (closed container > 5L)
  250 litres (closed container < 5L)

- Hazardous atmosphere zone:
  1 litre (open continuously)
  5 litres (open occasionally)
  25 litres (decanting)
  100 litres (closed containers)

- Signage: 250 litres
- Emergency Plan: 1000 litres
- Tracking: Not applicable

HSNO APPROVED CODES OF PRACTICE:

- Signage for premises storing hazardous substances and dangerous goods ACOP 2-1 (Responsible Care New Zealand Inc.)
- Hazardous Substances Storage Code ACOP 16 (Responsible Care New Zealand Inc.)
- Refer to Lactanol for current information on new HSNO approved codes

All regulatory requirements relevant to the mode of transport, is covered in section 14.

16. OTHER INFORMATION

Issue Date: 01.05.2019
Review Date: 20.04.2020

NOTE: All information given by Lactanol Limited is offered in good faith and is, to the best of our knowledge, true and accurate. However, since conditions of use are beyond our control, all information relevant to usage is offered without warranty or guarantee and should not be construed as a representation that the product is suitable for any particular purpose or application.