

MATERIAL SAFETY DATA SHEET (MSDS) ETHANOL (ETHYL ALCOHOL) MANUFACTURED BY: UNICOL LIMITED

This Material Safety Data Sheet is intended to comply with the requirement of International Standards of (Classification, Packaging, Labeling and Notification of Dangerous Substances)

1. IDENTIFICATION OF PRODUCT AND COMPANY

CAS NO: 64-17-5
EU INDEXE NO: 603-002-00-5
IMCO: 3
UN NO: 1170
PACKAGING GROUP: II

Manufacturer/Supplier: UNICOL LIMITED
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Emergency Contact: 0092-345-2999923

2. COMPOSITION INFORMATION

INGREDIENT NAME: Ethanol
CHEMICAL FORMULA: C₂H₅OH
MOLECULAR WEIGHT: 46.07

3. HAZARDS IDENTIFICATION

HIGHLY FLAMMABLE:
FLASH POINT: 13 ~ 17 °C
IGNITION TEMPERATURE: 425°C
EXPLOSION LIMITS: LOWER: 3.5%v/v UPPER: 19%v/v

PROTECTION AGAINST FIRE & EXPLOSION:
Combustible vapors heavier than air. May form explosive mixtures with air.
Take measures to prevent electrostatic charges.



4. FIRST AID MEASURES

SKIN CONTACT

Irritating to skin. Remove affected person from source of contamination.
Wash contaminated skin promptly with soap or mild detergent and water.
Remove clothing promptly, if soaked through, and wash as above.

EYE CONTACT

Irritating to eyes. Can be damaging if large amount is splashed into eyes.
Wash eyes promptly with plenty of water, while lifting the eye lids.
Continue to rinse for at least 15 minutes, and get medical attention.

INGESTION

Intoxicating if ingested. (If ingested in undiluted form, it has a severe drying effect on mucous membranes of mouth and throat) NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS.
Wash out mouth thoroughly, and give plenty of water to drink.
Do not induce vomiting. Get medical attention immediately.

INHALATION

Occupational exposure limits (8-hour reference period) 1000 ppm (1900 mg/m³).
Intoxicating if continuously inhaled for a long period of time. Move the person to fresh air, immediately perform artificial respiration if breathing has stopped.

When breathing is difficult, properly-trained personnel may administer oxygen.
Keep the person warm and at rest. Get medical attention promptly.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Use extinguishing media appropriate for surrounding fire. Water, dry chemicals, (BC or ABC powder), CO₂, sand, dolomite, etc. Foam.
DO NOT extinguish fire unless flow can be stopped first.

SPECIAL FIRE FIGHTING PROCEDURES

Keep upwind. Shut down all possible sources of ignition.
Water may be ineffective but use to keep fire-exposed containers cool.
Keep run-off water out of sewers and water sources. Dike for water control.
Avoid water in straight hose stream; will scatter and spread fire. Use spray or fog nozzles.
Cool containers exposed to flames with water from the side until well after the fire is out.
Move container from fire area if it can be done without risk.
If risk of water pollution occurs, notify appropriate authorities.

UNUSUAL FIRE & EXPLOSION HAZARDS

Makes explosive mixtures with air. Extremely flammable. May explode in a fire.
May travel considerable distance to source of ignition and flash back.

HAZARDOUS DECOMPOSITION PRODUCTS

Gases of:

Carbon monoxide (CO)
Carbon dioxide (CO₂)

6. ACCIDENTAL RELEASE MEASURES

SPILL CLEANUP METHODS

Ventilate well, stop flow of vapor or liquid if possible.
Shut off or remove all possible sources of ignition.
Do not allow chemical to enter confined spaces such as sewers due to explosion risk.
Sewers designed to preclude formation of explosive concentrations of vapour may be permitted.
Absorb small quantities with paper towels and evaporate in safe place (fume hood).
Allow sufficient time for vapors to completely clear the hood ducts, then burn the paper in a location away from combustible materials.
Collect for reclamation or absorb in vermiculite, dry sand or similar material.
Clean-up personnel should use respiratory and/or liquid-contact protection.
Provide ventilation and confine spill.
Do not allow runoff to sewer.

7. HANDLING AND STORAGE

USAGE PRECAUTIONS

Keep away from heat, sparks and open flame.
Avoid spilling, skin and eye contact.
Ventilate well, avoid breathing vapors.
Use approved respirator if air contamination is above acceptable level.
Do not use contact lenses.

STORAGE PRECAUTIONS

Flammable/combustible. Keep away from oxidizers, heat and flames.
May attack some plastics, rubber and coatings.
Keep in cool, dry, ventilated storage and closed containers.
Ground the container and transfer equipment to eliminate static electric sparks.

STORAGE CRITERIA

Flammable liquid storage.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

VENTILATION

Store in a well-ventilated area.

RESPIRATORS

No specific recommendation made, but respiratory protection must be used if the general level exceeds the Occupational Exposure Level (OEL).

PROTECTIVE GLOVES

Use protective gloves made of butyl rubber.

EYE PROTECTION:

Wear approved chemical safety goggles where eye exposure is reasonably probable.
Contact lenses should not be worn when working with this chemical!

OTHER PROTECTION

Use engineering controls to reduce air contamination to permissible exposure level.
Provide eyewash station and safety shower.
Wear appropriate clothing to prevent repeated or prolonged skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE:	Liquid. Clear. Hygroscopic
COLOUR:	Colorless
ODOUR/TASTE:	Characteristic. Pleasant, agreeable
SOLUBILITY DESCRIPTION:	Miscible with water. Soluble in most organic solvents
BOILING POINT (°C):	~78
MELTING POINT (°C):	-117.3
SPECIFIC GRAVITY (water = 1):	0.79 @ 20°C
VAPOUR DENSITY (air = 1):	1.59
VAPOUR PRESSURE:	44 mm Hg @20°C
EVAPORATION RATE:	3.10
VOLATILE BY VOL. (%):	100
VISCOSITY:	1.19 cps @ 20°C
FLASH POINT (°C):	13 ~ 17 (Closed-cup method)
AUTO IGNITION TEMPERATURE (°C):	422
FLAMMABILITY LIMIT (lower %):	3.3
FLAMMABILITY LIMIT (upper %):	19
pH VALUE:	Neutral

10. STABILITY AND REACTIVITY

STABILITY: Avoid heat, sparks, and flames. Normally stable.

CONDITIONS TO AVOID: Reacts strongly with alkali metals, alkaline earths, oxidizing agents (such as: Perchlorates, CrO₃, halogen oxides, peroxy compounds, perchloric acid, non-metallic oxides, nitric acid, KMnO₄, salts of halogen, oxyacids), halogen-halogen compounds, alkali oxides, non-metallic halides, anhydrides/sodium acetate/acids, ethylene oxide, fluorine, hydrides, mercury compounds, silver compounds, chromyl chloride, UF₆; capable of exploding with air in a vaporous/gaseous state.

HAZARDOUS POLYMERIZATION: Will not polymerize.

MATERIALS TO AVOID: Strong oxidizing agents.

HAZARDOUS DECOMPOSITION PRODUCTS: Vapors/gases/fumes of:
Carbon monoxide (CO)
Carbon dioxide (CO₂)

11. TOXICOLOGICAL INFORMATION

HEALTH WARNINGS: Vapor is harmful on prolonged exposure or in high concentration.

When in a concentration of more than 50%, ethanol causes local mucosal lesions through dehydration and albumin precipitation. Absorption, which occurs swiftly from the gastrointestinal tract, causes euphoria, with subsequent dizziness, inebriation, paralysis, diminished reflex, excitability, cyanosis, narcosis and respiratory paralysis. Dangerous intolerance reactions and increased absorption occur through the simultaneous action of disulfiram, trichloroethylene, tetra-chloromethane, nitrobenzene, carbon disulfide, aniline, lime-nitrogen, arsenic, lead and mercury. CNS depressant. Repeated exposure may cause chronic eye irritation. Defatting, drying and

cracking of skin. Mild dermatitis, allergic skin rash. Swallowing concentrated chemical may cause severe internal injury.

MEDICAL SYMPTOMS: Rhinitis (inflammation of the nasal mucous membranes). Upper respiratory irritation. Skin irritation. Nausea, vomiting.

MEDICAL CONSIDERATIONS: Convulsive disorders, CNS problems.

12. ECOLOGICAL INFORMATION

Ethanol is biodegradable and has not been shown to interfere in any way with waste water treatment plants. In high concentrations it harms fish and plankton. 9,000 mg/l kills fish in 24 hours; threshold for deleterious effects in small crustaceans (Daphnia): upwards of 7,800 mg/l. Toxic threshold concentration: *Pseudomonas putida* upwards of 6,500 mg/l, *Scenedesmus quadricauda* upwards of 5,000 mg/l, *Microsystis aeruginosa* upwards of 1,450 mg/l. Fish toxicity: LC50>10,000 mg/l.

13. DISPOSAL CONSIDERATIONS

It may run into process drains if greatly diluted with water. It may be removed to open atmosphere for dissipation of vapours. May absorb in vermiculite or dry sand, and then dispose in licensed special waste site. Dispose of in accordance with Local Authority requirements.

14. TRANSPORT INFORMATION

LABEL FOR CONVEYANCE: Flammable Liquid

ROAD TRANSPORT: Transport in road worthy tankers duly approved by the road and transport authorities of Pakistan

15. REGULATORY INFORMATION

LABEL FOR SUPPLY: Highly Flammable
RISK PHRASES: Highly Flammable

SAFETY PHRASES:
S-2 Keep out of the reach of children
S-7 Keep container tightly closed
S-16 Keep away from sources of ignition - No Smoking

16. OTHER INFORMATION

INFORMATION SOURCES:

Dangerous Properties of Industrial Chemicals,
Handbook of Toxic and Hazardous Chemicals and Carcinogens, Sittig, 1985.
Material Safety Data Sheet, Misc. manufacturers.
The Merck Index, 11. Edition, 1989.
Chemical Safety Data Guide, Bureau of National Affairs, 1985.

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

DOCUMENT MAY BE REFERRED TO BY PERSONS UNDER STRESS, IN EMERGENCY SITUATIONS.



UNICOL LIMITED