

1. Product Identification.

Product Name: Ethanol
Synonyms: Ethyl Alcohol, spirit, alcohol
Form: Liquid.
Colour: Colourless.
Odour: Characteristic.

2. Composition/ Information on Ingredients.

Formula: C_2H_5OH
CAS No: 64-17-5
Molecular Weight: 46.07

3. Hazards Identification.

Most important hazards: Highly flammable. Vapour and air are mixing easily. Risk of explosion with air. Reacts violently with strong acids and oxidising agents with risk of fire and explosion. Take measures to prevent electrostatic charges.

Skin Contact (S 24): Irritating to skin.

Eye Contact (S 25): Irritating to eyes. Can be damaging if large amount is splashed into eyes.


Ingestion: Intoxicating if ingested. If ingested in undiluted form, it has a severe drying effect on mucous membranes of mouth and throat.

Inhalation (S 51): Occupational exposure limits (8-hour reference period) 1000ppm 1900 mg/m³. Intoxicating if continuously inhaled for a long period of time.

4. First Aid Measures.

Inhalation: Move to fresh air. Calm the victim and bring patient in half sitting position. If symptoms persist, seek medical attention.

Skin Contact: Take off immediately all contaminated clothing and wash before re-use. Wash off immediately with plenty of water for at least 15 minutes. In severe cases obtain medical attention.



Eye Contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If discomfort persists, obtain medical attention.

Ingestion: Wash out mouth thoroughly with water and give plenty of water to drink. If necessary obtain medical attention.

5. Fire Fighting Measures.

Suitable Extinguishing Media: Dry powder, alcohol resistant foam, carbon dioxide (CO₂), water spray, halons.

Specific Hazards: Vapour/air mixtures can be explosive.

Specific Methods: Keep upwind. Shut down all possible sources of ignition. Keep all nearby vessels cool with water spray, but ensure that the water does not make contact with the liquid burning fuel. Extinguish fire with foam ensuring that foam is not broken by firemen and the ground around the Branchman is covered with foam. Apply foam to potential fire hazards. **DO NOT USE WATER JET.** Spray or fog nozzles may be used.

Special protection for fire-fighters: In case of fire utilise a self-contained breathing apparatus and protective clothing.

General Advice: Collect contaminated extinguishing water separately, dispose only in accordance with local regulations.

6. Accidental Release Measures.

Personal precautions: Use personal protective equipment.

Environmental precautions: If possible prevent runoff to surface water and sewer systems. In case of necessity: Flush only highly diluted into sewer system.

Methods for cleaning up: Large quantity – Remove large volumes by soaking up in sand or earth product immediately and store in suitable drums.
Small quantity - Remove the spill by means of an inert absorbent and carry it to a safe place. Flush remainder with plenty of water.

7. Handling & Storage.

Handling: Avoid contact with skin, eyes and clothing. Do not breath vapours or spray mist. Take normal precautions when handling inflammable



products. Do not use compressed air when filling, emptying or processing.

Technical measures/ precautions: Ensure adequate ventilation. Emergency shower and eyewash fountains should be available.

Storage: Keep tightly closed in a dry, cool well ventilated place. Keep away from strong acids and oxidising agents in a fire resistant warehouse.

Packaging material: Stainless steel, polyethylene (HD), glass, coated steel, polypropylene.

8. Exposure Controls and Personal Protection.

Engineering measures: Use only explosion-proof equipment. Apply the product in closed systems only. Use sparkless tools only.

Hygiene measures: When using, do not eat, drink or smoke.

Exposure limit: TLV (treshold limited value): 500 ppm = 1000 mg/m³

Personal protection equipment: Respiratory protection: In case of insufficient ventilation, wear a self-contained breathing apparatus or halfmask with a filter type A.

Hand protection: Neoprene rubber gloves.

Eye protection: Safety glasses with side shields.

Skin and body protection: Protective suit.

9. Physical and Chemical Properties.

Physical appearance: Liquid
 Colour: Colourless
 Odour: Characteristic
 Boiling point range: 78⁰C
 Viscosity: 1.52 cSt
 Melting point range: - 117⁰C
 Vapour pressure: 58.8 hPa (20⁰C)
 Vapour density: 1.6 (air = 1)
 Flash point: 12⁰C PMCC
 Autoignition Temperature: 370⁰C
 Explosion Limits: Lower: 3.4 % vol. % of the vapour in air
 Upper: 19 % vol. % of the vapour in air



Solubility: Completely miscible with water
Partition coefficient(n-octanol/water): $\log POW = -0.32$

10. Stability & Reactivity.

Stability: Stable.

Conditions to avoid: Heating in air, capable of exploding in air.

Hazardous reactions (R16): With alkali metals, alkaline earth metals, oxidizing agents (inter alia Perchlorates, CrO_3 , halogen oxides, peroxy compounds, perchloric acid, non-metallic oxides, nitric acid, $KMnO_4$, 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, UF_6 .

Hazardous decomposition products: Carbon monoxide and carbon dioxide


11. Toxicological Information.

Acute Toxicity: Inhalation: Cough, dizziness, migraine, drowsiness
Skin Contact: Redness
Ingestion: Dizziness, migraine, inco-ordination

Chronic Toxicity: Harmful: Danger of serious damage to health by prolonged exposure if swallowed.

Further Information: LD_{50} / oral / rat = 6200mg/kg
 LC_{50} / inhalation / 4hr / rat = > 8000 mg/l
 LD_{50} / dermal / rabbit = > 20000 mg/kg

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.

12. Ecological Information.

Ecotoxicity effects: Mobility - completely and quickly soluble in water. No bioaccumulation. The product is readily biodegradable. Biochemical oxygen demand within 5 days = (BOD₅) 37 - 74 %

Further information: LC₅₀ / 48hr / fish = > 8000 mg/l
LC₅₀ / 48hr / daphnia = > 8000 mg/l

13. Disposal Considerations.

Waste from residues-unused products: Depending on the extent of the contamination reclaiming or incineration of the product by an officially authorized enterprise.
Empty Containers: Can be offered for re-utilisation, re-conditioning or destruction.

14. Transport Information.

UN Number: 1170
ARD/RID: Class: 3
Item: 3b
IMO/IMDG: Class: 3.2
Proper shipping name: Ethanol 100 %
ICAO/IATA: Class: 3
Proper shipping name: Ethanol 100 %

15. Regulatory Information.

EINECS Number: 200-578-6
Symbols: F - Highly flammable
R Phrases: R 11 - Highly flammable.
S Phrases: S 2 - Keep out of reach of children.
S 7 - Keep container tightly closed.
S 16 - Keep away from sources of ignition - No smoking.

16. Other Information.

Information contained in this publication, while accurate to the best knowledge and belief of Carbon Group, is not intended and should not be construed as a warranty or representation for which Carbon Group assumes any legal responsibility.

Any information or advice obtained from Carbon Group otherwise than by means of this publication and whether relating to Carbon Group material or other materials, is also given in good faith. However, it remains at all times the responsibility of the customer to ensure that Carbon Group materials are suitable for the particular purpose intended.



Insofar as materials not manufactured or supplied by Carbon Group are used with or instead of Carbon Group material, the customer should ensure that he has received from the manufacturer or supplier all technical data and other information relating to such materials.

Carbon Group accepts no liability whatsoever (except as otherwise expressly provided by law) arising out of the use the information supplied, the application, adaptation or processing of the products described herein, the use of other materials in lieu of Carbon Group materials or the use of Carbon Group materials in conjunction with other materials.

Supplier:

**Carbon Group,
Ringaskiddy,
Co. Cork.**

Tel: 021 - 4378988

Fax: 021 - 4378950

