

Importance Of Ethanol To The Society

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IMPORTANCE OF ETHANOL TO THE SOCIETY

Introduction

Ethanol is an organic compound with the formula $\text{CH}_3\text{CH}_2\text{OH}$. It can also be called ethyl alcohol or simply alcohol. It is a clear colorless liquid with a burning taste and a wine-like odor. It is also highly flammable and volatile. Ethanol is the active ingredient in alcoholic beverages like beer and wine. It is miscible with water and many other organic solvents like acetone and benzene. Its boiling point is 78.37 Degree Celsius.

Ethanol can be produced by either fermentation of sugars or through the hydration of ethylene. In hydration of ethylene, ethylene-rich gas is mixed with water and converted into ethanol when passed over a catalyst. The common catalysts used include phosphoric (V) acid-coated onto a solid silicon dioxide and phosphoric acid on silica. ($\text{C}_2\text{H}_4 + \text{H}_2\text{O} \rightarrow \text{CH}_3\text{CH}_2\text{OH}$). In the fermentation process, certain species of yeast are used to metabolize sugar, producing ethanol and carbon (IV) oxide. It is carried out in temperatures between 35-40 Degrees Celsius. ($\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow 2 \text{CH}_3\text{CH}_2\text{OH} + 2 \text{CO}_2$). Higher concentrations are obtained through distillation since toxicity of ethanol to yeast limits the ethanol concentration.

Despite its widespread use, ethanol through alcoholism is a major social, economic and public health problem throughout the world. It has short-term effects like impaired coordination and judgement, slurred speech, memory impairment and altered perception. The long-term effects are liver damage, cardiovascular problems and a weakened immune system to the user. The social problems may include employment issues, legal consequences and also relationship problems. That being said, it is widely used in the world and has various importance that are discussed below.

Importance of ethanol to the society.

Ethanol holds significant importance in the society as a versatile alcohol with various applications as;

a) A source of employment.

Ethanol manufacturing industries like the beer and wine industries provide jobs to the area residents thus a source of income. Also, one may sell the products like beer and wine to earn some cash thus an alternative source of income.

b) As antiseptics.

Ethanol is present in hand sanitizers which are used kill microorganisms such as fungi, bacteria and viruses through cell dehydration. It is also used in different household cleaning products to kill bacteria that may be found in surfaces like tables.

c) In the cosmetics industry.

Ethanol is found in different personal health care products and serves the following purposes;

- It is used as a preservative in lotions and creams. It helps adhere the ingredients together to avoid separation.
- It is used as an astringent. It helps clean the skin and makes it less oily. It also causes contraction of the skin pores and cells.
- Its presence in the cosmetic products also helps in killing microorganisms that may be found on the skin.

d) In the medical field.

- Orally or through injection, ethanol is used to treat methanol or ethylene glycol toxicity in the body by acting as competitive inhibitor against methanol
- It is used to disinfect the skin before a surgery or before an injection in hospitals.
- 25% of ethanol is found in mouth washes and is also used to dissolve many water-insoluble medications and related compounds.

- In different medicine including iron supplements, mannitol and acetaminophen, it is used as an antimicrobial preservative.
- When consumed it is used as a central nervous system depressant.
- It is also used in the extraction of medicinal compounds from plants, forming tinctures and extracts. This is employed to create concentrated forms of medicinal substances for use in various pharmaceutical products.

e) In various industries.

- Ethanol is used in fuel production as a biofuel. It can be blended with gasoline to produce ethanol fuel, which is a renewable source and is more environmental-friendly.
- In the chemical manufacturing industry, it is used as a key ingredient in the synthesis of chemicals like acetic acid, ethylene and other organic compounds. These chemicals are in turn essential for the production of plastics and solvents.
- Ethanol is a common ingredient in the production of alcoholic beverages.
- Ethanol is also applied in the food and beverage industry for purposes such as food processing, flavor extraction and as a solvent in the production of extracts and flavorings.

f) For recreational purposes.

Ethanol is used for recreational purposes in the form of alcoholic beverages. People consume ethanol-containing drinks such as beer, wine and spirits for the pleasurable effects it has such as relaxation and euphoria. It is a brain depressant. The recreational uses may be associated with social and cultural purposes. Through beers, wines and spirits, through promotes a sense of socializing.

g) As a low-temperature fuel.

Ethanol has a low freezing point of -114 Degrees Celsius and a low toxicity. It is used with coolants like dry ice in laboratories as a cool bath. This helps keep vessels at temperatures below the freezing point of water.

Conclusion

The importance of ethanol to society is multifaceted and far-reaching. Ethanol holds significance in the society due to its versatile applications. Its contributions to medicine, manufacturing and recreation underscore its versatility and impact on both health and industry. Its diverse uses contribute to its overall importance in fostering sustainability and meeting social needs. However, it is vital to recognize the importance of responsible use, particularly in the context of recreational consumption, to ensure the positive contributions of ethanol are maximized while minimizing potential drawbacks. Ethanol, with its diverse applications, continues to be a valuable and influential component of our societal fabric.

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