

Alcohol: Applications and Physical Properties

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INTRODUCTION

Alcohol is an organic compound with at least one hydroxyl functional group (-OH) attached to a saturated carbon atom. The term alcohol originally refers to the primary alcohol ethanol (ethanol), used as a medicine, and is the main alcohol present in alcoholic beverages. An important class of alcohols, in which methanol and ethanol are the simplest members, including all compounds with the general formula $C_nH_{2n+1}OH$. The suffix -ol appears in the IUPAC chemical names of all substances, where hydroxyl is the functional group with the highest priority. When a higher priority group is present in a compound, the hydroxyl prefix is used in its IUPAC name. The suffix -ol in non-IUPAC names (such as paracetamol or cholesterol) also usually indicates that the substance is an alcohol. However, many substances that contain hydroxyl functional groups, especially sugars, such as glucose and sucrose, have names that do not include the suffix -ol or the prefix hydroxyl. Simple alcohols are very widespread in nature. Ethanol is the most prominent because it is a product of fermentation and the main way of producing energy. Other simple alcohols are formed only in small amounts. However, the more complex alcohols are ubiquitous, as evidenced by sugars, certain amino acids, and fatty acids. The four alcohols are ethanol, denatured alcohol, isopropanol, and isopropyl alcohol. The one we know about is ethanol, also known as ethanol or grain alcohol.

APPLICATIONS

Alcohol has a long history of countless uses. For simple monohydric alcohols, the following are the most important industrial alcohols:

- Methanol, mainly used for the production of formaldehyde and as a fuel additive.
- Ethanol, mainly used for alcoholic beverages, fuel additives, solvents.
- 1-Propanol, 1-Butanol and isobutanol.
- Used as solvents and solvent precursors
- C6-C11 alcohols used as plasticizers.
- Fatty alcohol (C12-C18), detergent precursor.
- Methanol is the most common industrial alcohol. In 1980, about 12 million tons were produced per year. The comprehensive production capacity of other alcohols is roughly the same, roughly equally distributed.

PHYSICAL PROPERTIES

Generally, the hydroxyl group makes the alcohol polar. These groups can form hydrogen bonds with each other or with most other compounds. Due to the presence of polar OH, alcohols are more soluble in water than simple hydrocarbons. Methanol, ethanol, and propanol are miscible with water. Butanol with a four carbon chain has moderate solubility. Due to hydrogen bonding, alcohols tend to have higher boiling points than hydrocarbons and similar ethers. The boiling point of ethanol alcohol is 78.29 °C, while the boiling point of the hydrocarbon hexane is 69 °C and the boiling point of diethyl ether is 34.6 °C.

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