

substituents, which can be alkyl, hydrogen, or halogen groups. Examples include isopropanol ($\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$) and butanol ($\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$).

* Tertiary Alcohols: Tertiary alcohols feature a hydroxyl group attached to a carbon atom with three alkyl groups. 2-methyl-2-propanol ($\text{CH}_3\text{C}(\text{CH}_3)_2\text{OH}$) is an example of a tertiary alcohol.

Physical Properties of Alcohols

Alcohols exhibit a range of physical properties, influenced by their molecular structure and intermolecular forces.

* Boiling Points: Alcohols have higher boiling points than alkanes with the same number of carbon atoms due to hydrogen bonding between hydroxyl groups.

* Solubility: Lower alcohols, such as methanol and ethanol, are miscible with water due to their ability to form hydrogen bonds with water molecules. Higher alcohols, with longer alkyl chains, become less soluble in water as the chain length increases.

* Density: Alcohols are generally less dense than water due to their lower molecular weights.

Chemical Properties of Alcohols

Alcohols are versatile and reactive compounds, undergoing various chemical reactions due to the polarity of the hydroxyl group.