

N-Dodecane, also known as dodecane or normal dodecane, is a saturated hydrocarbon with the chemical formula  $C_{12}H_{26}$ . Conclusion: N-Dodecane is a versatile and important chemical in various industrial applications, primarily valued for its stability, non-reactivity, and solvent properties.

Physical State and Appearance: State: Liquid at room temperature Color: Colorless Odor: Odorless

Melting and Boiling Points: Melting Point:  $-9.6^{\circ}C$  ( $14.7^{\circ}F$ ) Boiling Point:  $216.2^{\circ}C$  ( $421.2^{\circ}F$ ) Density: Density: Approximately  $0.75\text{ g/cm}^3$  at  $20^{\circ}C$

Solubility: Water Solubility: Insoluble in water Solubility in Organic Solvents: Soluble in organic solvents such as alcohols, ethers, and benzene

Viscosity: Viscosity: Low viscosity, which increases slightly with decreasing temperature

Flash Point: Flash Point: Approximately  $74^{\circ}C$  ( $165^{\circ}F$ )

Applications: Industrial Solvent: Due to its non-polarity and chemical inertness, n-dodecane is commonly used as a solvent in organic reactions and in the formulation of coatings, paints, and varnishes.

Chemical and Physical Properties: Molecular Structure: Chemical Formula:  $C_{12}H_{26}$  Molecular Weight:  $170.33\text{ g/mol}$  Structure: Linear chain of 12 carbon atoms, each bonded to sufficient hydrogen atoms to satisfy the valency of carbon ( $C-C-C-C-C-C-C-C-C-C-C-C$ ).

Fuel Research: N-Dodecane is used as a reference fuel in combustion research and studies related to internal combustion engines due to its similarity to diesel fuels.