



Limonene is a naturally occurring hydrocarbon belonging to the class of compounds known as terpenes. It is most commonly found in the peels of citrus fruits and is responsible for their characteristic scent. Limonene is widely used in various industries, including food, cosmetics, cleaning products, and even as a solvent.

Chemical Properties

- 1. Appearance:**
 - Limonene is a colorless liquid at room temperature, with a characteristic citrus aroma.
- 2. Solubility:**
 - It is insoluble in water but soluble in organic solvents such as ethanol, diethyl ether, and oils. Its hydrophobic nature makes it useful in oil-based formulations and as a solvent for organic compounds.
- 3. Boiling Point:**
 - Limonene has a boiling point of approximately 176°C (349°F).
- 4. Reactivity:**
 - Limonene is relatively stable under normal conditions but can oxidize when exposed to air, forming limonene oxide and other byproducts. This oxidation

process can affect its fragrance and stability. Limonene is also reactive with strong acids and can undergo polymerization under certain conditions.

5. Optical Activity:

- As a chiral molecule, limonene can rotate plane-polarized light, with D-limonene rotating light to the right and L-limonene rotating it to the left. This property is used to distinguish between the two enantiomers.

6. Odor Threshold:

- Limonene has a low odor threshold, meaning it can be detected at very low concentrations, which makes it a potent fragrance component.

7. Antimicrobial and Insect Repellent Properties:

- Limonene has natural antimicrobial and insect repellent properties, making it effective in natural cleaning products and insecticides.