

Sublimation in Organic Chemistry

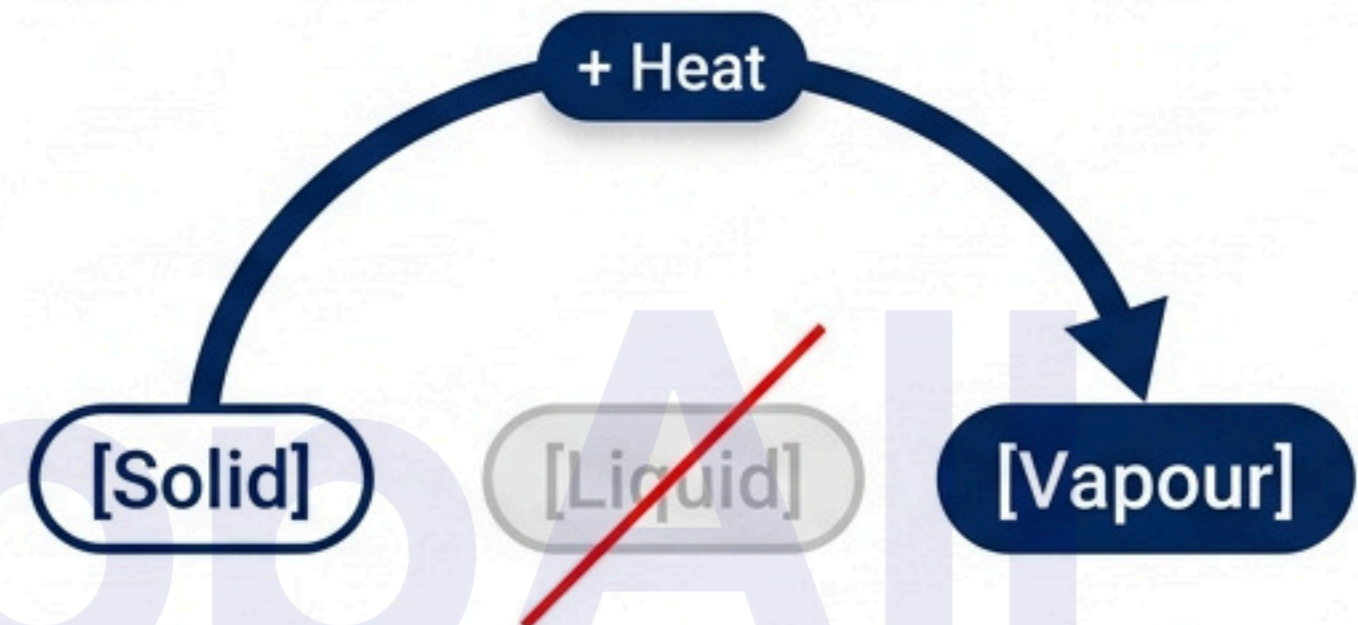
Mastering the direct solid-to-vapour phase change for the separation and purification of organic compounds.

Exam-Focused Summary

Bypassing the Liquid Phase

Some solid substances have the unique physical property of transitioning directly from a solid state to a vapour state upon heating.

Crucially, this happens without ever passing through the intermediate liquid state.





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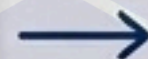
How Sublimation Purifies

Exploiting differing physical properties to separate mixtures.



1. Apply Heat

The crude mixture (containing both target compound and impurities) is carefully heated in a controlled laboratory vessel.



2. Phase Change

The **sublimable compound** instantly converts to gas. The **non-sublimable impurities** lack this property and remain behind as a solid residue.



3. Recover Target

The pure vapour hits a cool surface (like an inverted funnel) and immediately transitions back into a pure solid crystal.

Separation Mechanics

For this technique to work, the mixture components must have **strictly contrasting thermal behaviors**.

	Sublimable Target Compound	Non-Sublimable Impurity
Reaction to Heat	Vaporizes directly into a gas at a specific temperature.	Remains solid, or melts into a liquid at a much higher temperature.
Final Location in Lab Setup	Collects as pure solid crystals on the upper cooling surface.	Remains at the bottom of the original heating dish as residue.

Key Takeaways: Sublimation

✓ Definition

Sublimation is the direct conversion of a solid to a vapour, completely skipping the liquid phase.

✓ Requirement

It is highly effective only if the organic compound is sublimable and the impurities are completely non-sublimable.

✓ Result

Yields highly pure organic crystals on a cooling surface, leaving impure residue behind in the heating vessel.



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