

8.7.2 Fundamental Concepts

Substrate and Reagent

The Mechanics of Organic Reactions

An exam-focused guide to the attacking species, the attacked molecule, and the reactive site.
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Defining the Roles in a Reaction



The Substrate

[Target]

The reactant that supplies carbon to the new bond. It is the molecule being attacked.

The Reagent

[Actor]

The species that attacks the substrate to bring about a chemical change.



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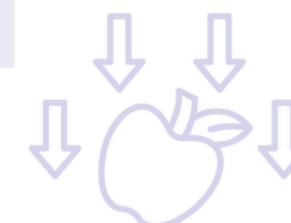
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The Target: Substrate & Reactive Site

Concept 1

The Substrate

The foundational organic molecule. In a reaction where a covalent bond is broken and a new one is formed, this is the molecule whose carbon is involved in the new bond formation.

Concept 2

The Reactive Site



- The specific region within the substrate where the reagent strikes.
- Determined entirely by electron density (can be an electron-deficient/positive site, or an electron-rich/negative site).

Diagnostic Matrix: Substrate vs. Reagent

	Substrate	Reagent
Primary Role	The organic molecule that is attacked.	The attacking species that initiates the reaction.
Chemical Contribution	Supplies carbon to the newly formed bond.	Brings about the chemical change by interacting with the substrate's electron density.
Exam Rule	What if BOTH reactants supply carbon to the new bond? The choice becomes arbitrary. In this case, the Substrate is simply defined as the molecule on which attention is currently focused.	

Key Takeaways

1

The Substrate

The organic reactant that is attacked and supplies carbon to the new bond.

2

The Reagent

The specific attacking species that targets the substrate to cause a chemical change.

3

The Reactive Site

The exact localized point on the substrate—dictated by either high or low electron density—where the reagent's attack occurs.



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