

Elimination Reactions of Haloalkanes

Mastering β -elimination,
dehydrohalogenation, and
Saytzeff's Rule.

The Language of Elimination

[β -elimination]

A reaction where atoms or groups are removed from two adjacent carbon atoms (α and β) to form a double bond.

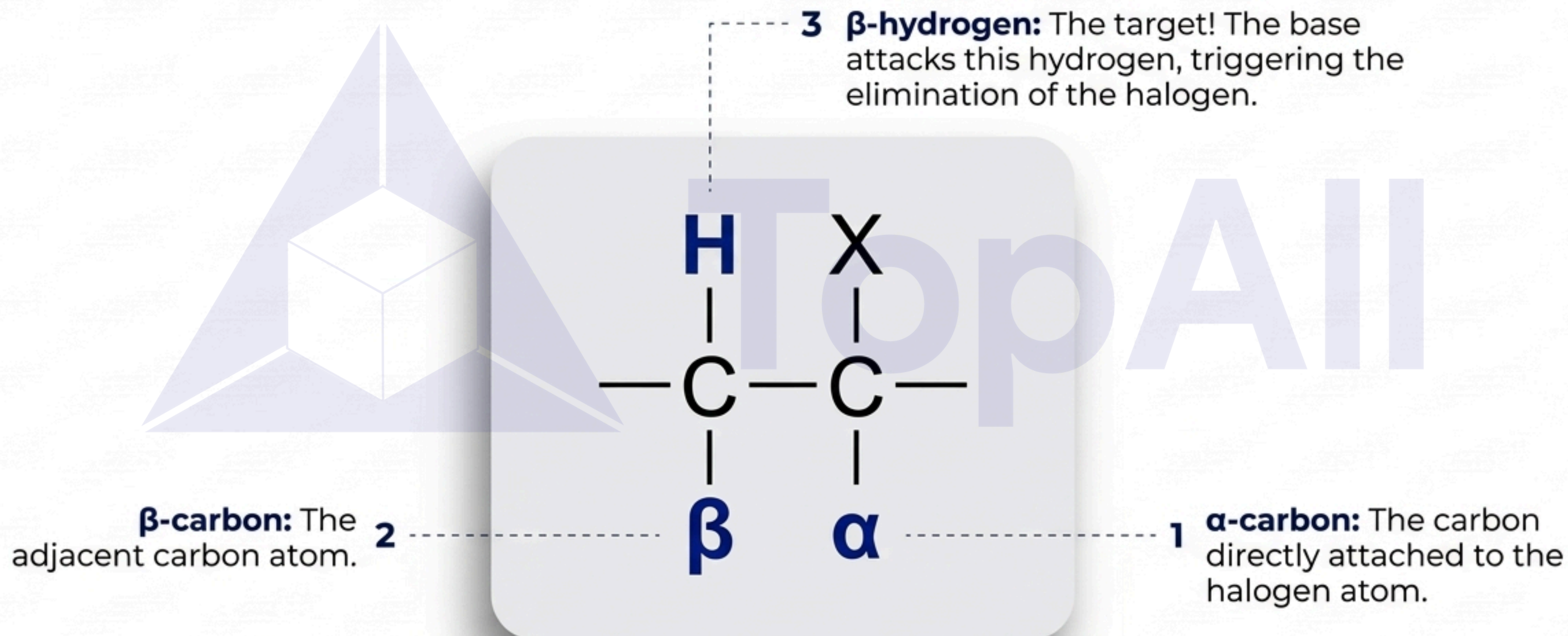
[Dehydrohalogenation]

The specific type of elimination in haloalkanes where a hydrogen atom and a halogen atom are lost from the molecule.

[Saytzeff's Rule]

A predictive rule stating that in dehydrohalogenation, the preferred (major) product is the most highly alkyl-substituted alkene.

Anatomy of a Haloalkane Before Elimination





You've Learned the Theory. Let's Test Them Now.

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

Practice Now



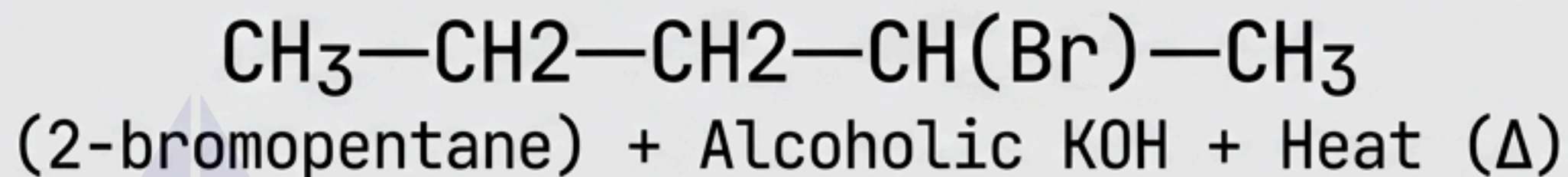
At prep.topall.app

Key Highlights

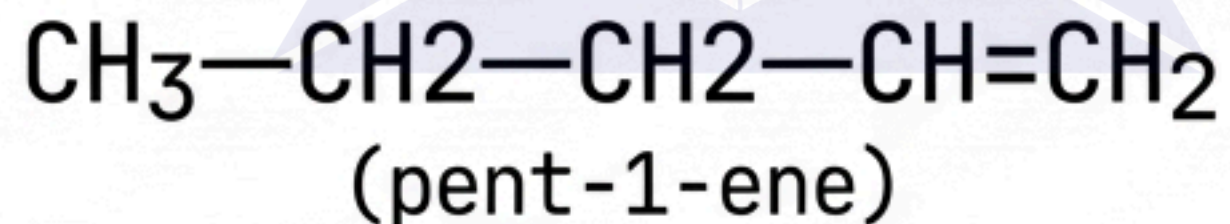
- » Free Study Material, Videos & Infographics
- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



The Saytzeff Split: 2-Bromopentane



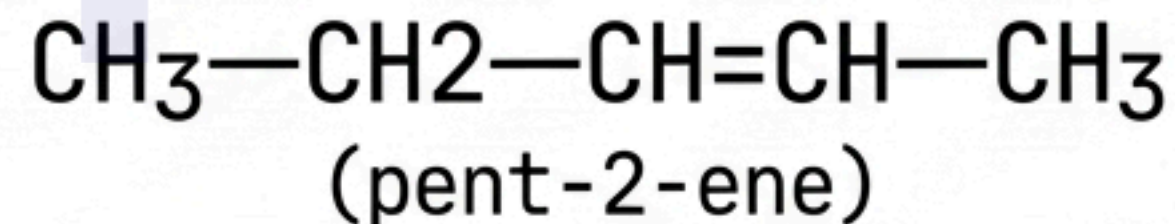
A



Minor (~19%)

Only **ONE** alkyl group attached to the double-bonded carbons.

B



Major (~81%)

TWO alkyl groups attached to the double-bonded carbons (**More substituted!**).

The Crossroads: Elimination vs. Substitution

The route a haloalkane takes depends entirely on the reagent, bulk, and conditions.

Substitution Reagent acts as a NUCLEOPHILE		Elimination Reagent acts as a BASE	
Trigger Conditions:	Aqueous KOH (aq.), smaller nucleophiles, lower temperatures.	Trigger Conditions:	Alcoholic KOH (alc.), bulky bases, heat (Δ).
Result:	The halogen is replaced. Alkyl halide $\rightarrow$ Alcohol.	Result:	A double bond is formed. Alkyl halide $\rightarrow$ Alkene.
Driver:	Less steric hindrance; nucleophile can easily reach the α -carbon.	Driver:	Steric bulk prevents access to the carbon, so the reagent grabs an exposed β -proton instead.

Common Exam Pitfall

Watch for this: The "Simpler" Alkene Illusion.

When asked for the major product of an elimination reaction, it is tempting to draw the terminal alkene (double bond at the end) because it is visually simpler to draw.

$\text{C}=\text{C}-\text{C}-\text{C} \neq \text{Major}$

$\text{C}-\text{C}=\text{C}-\text{C} = \text{Major}$

The Trap: Do not default to the simpler drawing.

The Fix: Always apply Saytzeff's Rule. Count the alkyl groups attached to the double bonded carbons. The **MORE** alkyl-substituted alkene is almost always your major product.

Summary

Core Concepts

1. **Elimination requires a β -hydrogen:** When treated with an alcoholic base (like alc. KOH) and heat, haloalkanes undergo dehydrohalogenation to form an alkene.
2. **Saytzeff decides the winner:** If there are multiple β -hydrogens available, the reaction yields competing products. The major product will always be the alkene with the greater number of alkyl groups attached to the double bond.



You've Learned the Theory.

Now Let's Test It.

Reading notes gets you knowledge.

Practicing MCQs gets you marks.

That's exactly what TopAll Pro is built for.

Try TopAll Pro Now

What TopAll Pro Does Differently

-  **Stuck? Snap it. Solve it. — Doubts AI**
Photo → step-by-step solution in seconds, 24/7
-  **Your AI Coach finds your blind spots**
Concept-level weakness detection — not just chapter-level
-  **4.5 Lakh+ questions. Never run out.**
13× more content than any other prep app in India
-  **Build your own test in 60 seconds**
Pick a chapter, set difficulty — AI does the rest instantly.
-  **AI Recommendation that helps you improve**
AI Recommendation Analysis your Tests and tell you where you need to improve.



Practice the moment you finish studying
Jump in while the concept is still fresh in your head

4.5L+
MCQs

1.5L+
Students

AI Powered
In-Depth Analysis