

Synthesis : Halogenation of Alkanes

Reagent	Cl ₂ / Br ₂
Condition	heat / UV light
Mechanism	free radical substitution
Equation	CH ₄ + Cl ₂ → CH ₃ Cl + HCl

Synthesis : Hydrohalogenation of Alkenes

also known as	Addition of hydrogen halides
Reagent	HCl / HBr / HI
Equation	CH ₃ CH ₂ CH=CH ₂ + HCl → CH ₃ CH ₂ CHCl-CH ₃ (every product must be shown)

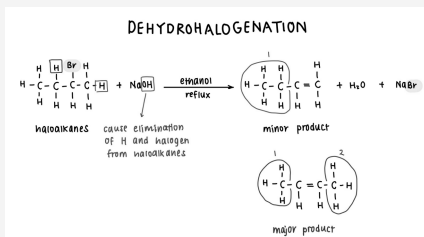
follow Markovnikov's rule : halogen added to doubly bonded carbon atom attached to **the least H atoms**

Dehydrohalogenation

Reagent	NaOH / KOH
Condition	ethanol, reflux
Mechanism	Elimination Reaction
Equation	haloalkane + NaOH → alkene (every product must be shown)

follow Zaitsev rule : doubly bonded carbon atom in alkenes bonded to **the most number of alkyl groups** is major products

Dehydrohalogenation



Synthesis : Halogenation of Alkenes

Reagent	Cl ₂ / Br ₂
Condition	CCl ₄
Equation	CH ₃ CH=CHCH ₃ + Cl ₂ → CH ₃ CHCl-CHClCH ₃

Hydrolysis

Reagent	aqueous NaOH / KOH
Condition	boiling
Mechanism	Nucleophilic Substitution
Equation	haloalkanes + NaOH → alcohol + NaCl

for carbons bonded to 2 halogens

Equation	CH ₃ CHCl ₂ + NaOH → CH ₃ CH(OH) ₂ CH ₃ CH(OH) ₂ → CH ₃ CH=O (loss of water)
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Hydrolysis

